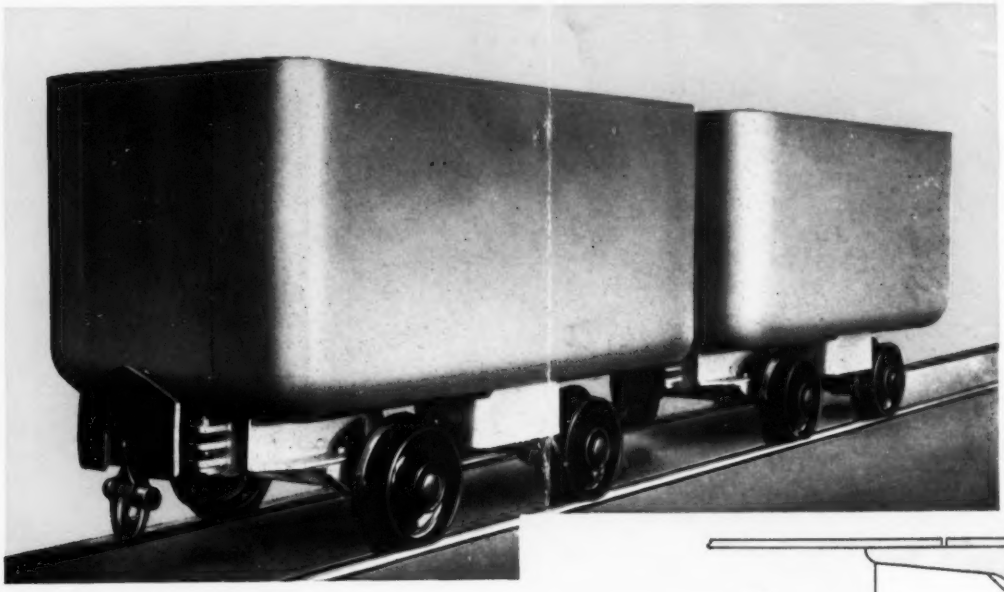
The Mining Journal

Established 1835

Railway & Commercial Gazette

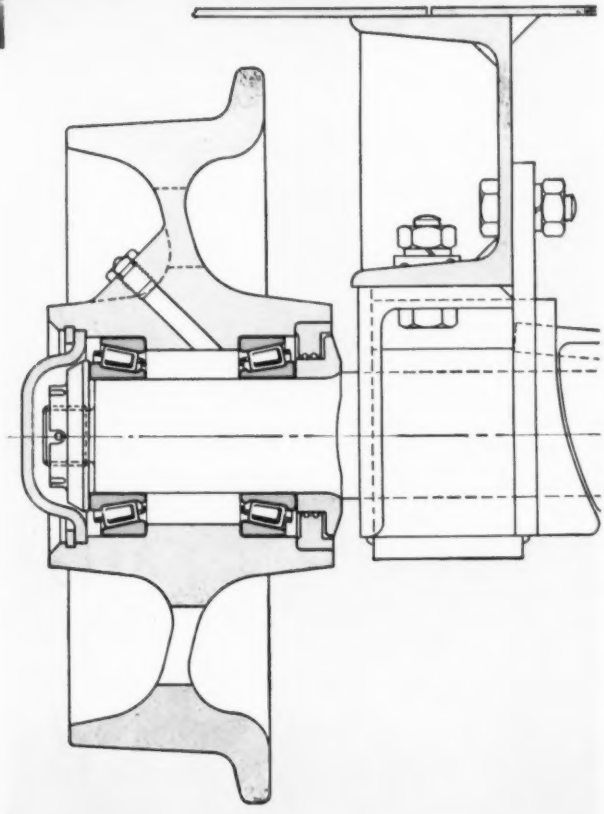
Vol. CCXLVI No. 6305 | LONDON, JUNE 22, 1956 | PRICE 9d.



ON 2-TON MINE CARS

These mine cars of G. H. H. design, made by the Crowborough Engineering Co. Ltd., of Aycliffe, Darlington, for Dollery & Palmer Ltd., London, have a number of interesting features, including a special swinging wheel and axle mounting.
The car has a capacity of 83 cubic feet and a weight of 22 cwt. unloaded. The wheels run on Timken tapered-roller bearings, as shown in the line drawing.

MADE IN ENGLAND



TIMKEN Regd. Trade Mark: TIMKEN

tapered-roller bearings

BRITISH TIMKEN LTD.,

DUSTON, NORTHAMPTON (HEAD OFFICE); AND BIRMINGHAM

Telephone: Northampton 4921 (10 lines); Telex No. 31-620
Telegrams: Britimken Northampton Telex

Subsidiary Companies:
Fischer Bearings Company Ltd., Wolverhampton
Timken-Fischer Stockists Ltd., Birmingham.

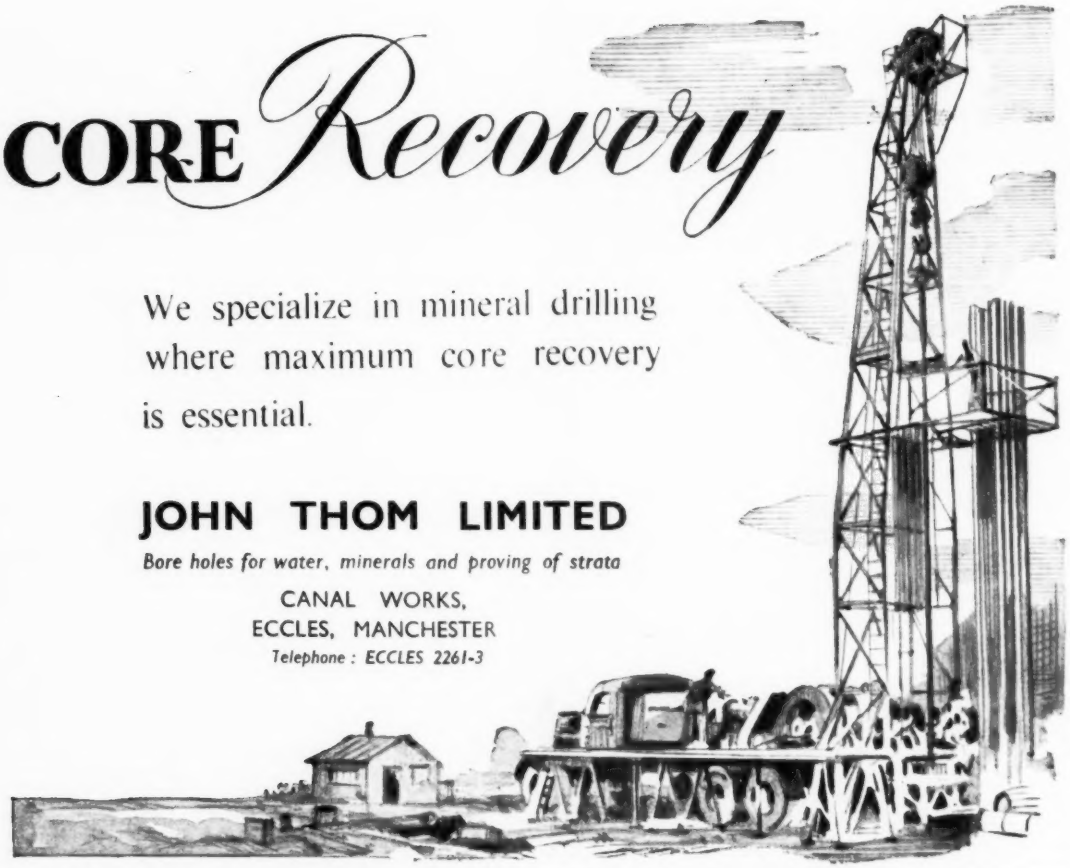
CORE *Recovery*

We specialize in mineral drilling where maximum core recovery is essential.

JOHN THOM LIMITED

Bore holes for water, minerals and proving of strata

CANAL WORKS,
ECCLES, MANCHESTER
Telephone : ECCLES 2261-3

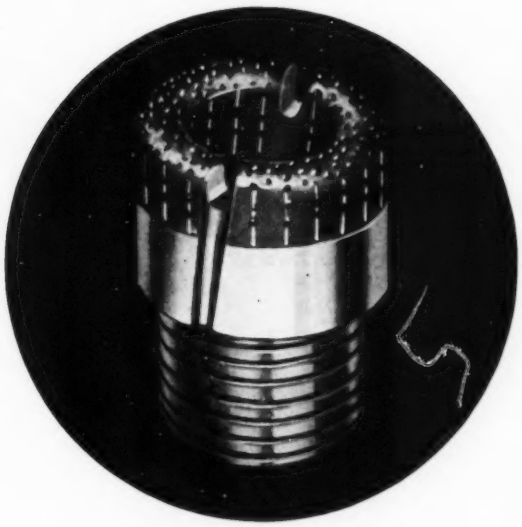


BY ANY METHOD

ANYWHERE IN THE WORLD

The CEMENTATION COMPANY LIMITED
BENTLEY WORKS, DONCASTER Tel. 54177-3-9

SHAFT SINKING



DIAMONDS first came from the Orient

India was the only country producing diamonds for over two thousand years. The mining of the stones began between 800 and 600 B.C. There is a Greek statuette in the British Museum which has two diamonds for eyes. It is dated 500 B.C. It is the earliest application of diamonds of which we know.

About A.D. 600 diamonds were found in Borneo, but no new source of diamonds was found until the Brazilian fields were discovered in the eighteenth century.

Only a little later the South African deposits were opened up, and most of the diamonds used during the last 60 years of diamond bit development have come from there.

It has been our privilege to lead in that development.

Our bits are used all over the world, wherever man seeks the treasures of the earth. We have evolved diamond bits to meet all conditions and to give profitable results in all formations.

That experience and knowledge is at your disposal in the solving of any drilling problem. Get in touch with us before deciding on any question of drilling.

We can help you with the widest technical manufacturing facilities backed by the most practical knowledge of the subject.

SUPER MATERIAM IGNIS TRIUMPHANS

Est 1888

J. K. SMIT & SONS (DIAMOND TOOLS) LTD.

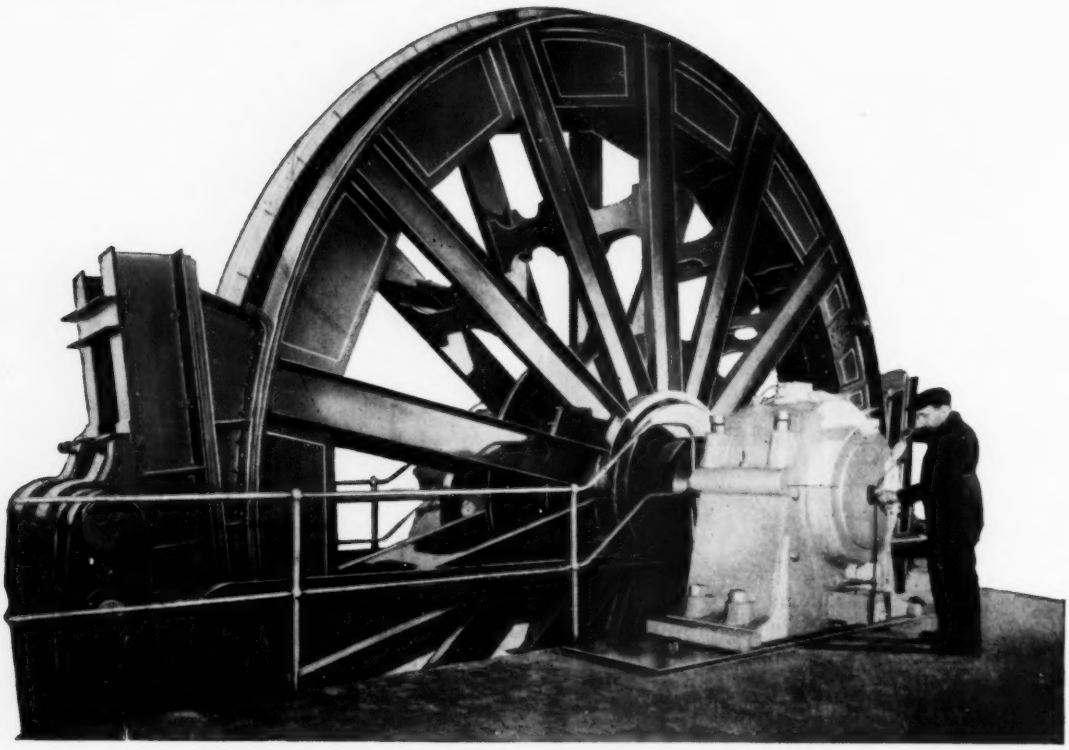
22-24, Ely Place, Holborn Circus, London, E.C.1

Telephone : ★ HOLborn 6451

European, American and Canadian Offices:

J. K. Smit & Zonen Diamantgereedschappen (Diamond Tools) N.V., Sarphatistraat 66, Amsterdam (C) Holland
J. K. Smit & Fils, 54, Avenue Marceau, Paris 8e, France
J. K. Smit & Sons, Inc. Murray Hill, New Jersey, U.S.A.
J. K. Smit & Sons of Canada Ltd., 129, Adelaide Street West, Toronto, 1

BRITAIN'S FIRST LARGE KOEPE WINDER AT BRADFORD COLLIERY



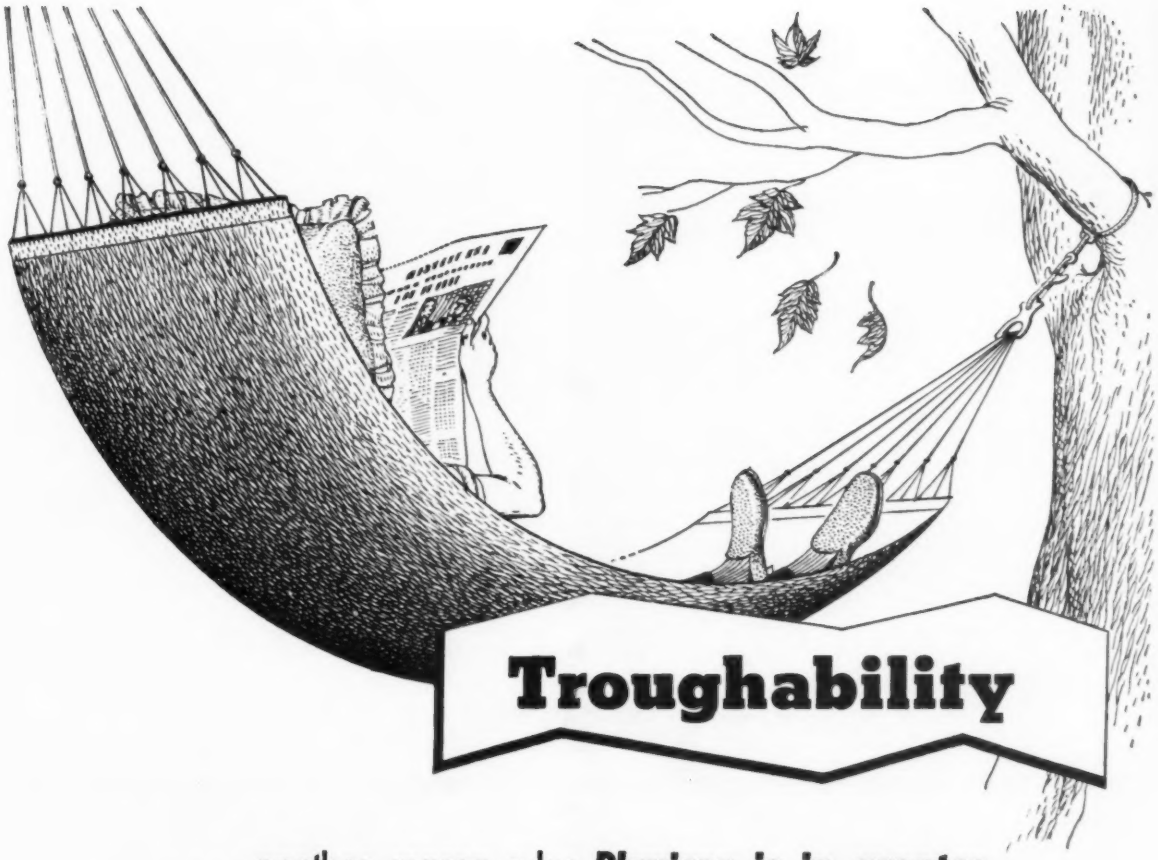
To meet the requirements of the reconstructed Bradford Colliery, Manchester, this 24 ft. diameter Koepe winder has been installed to raise 400 tons per hour in 12-ton skips from an ultimate depth of 3,850 ft.

The mechanical parts were built at Fraser & Chalmers, Engineering Works, and the winder is one of the largest of its kind yet to go into service.

G.E.C.

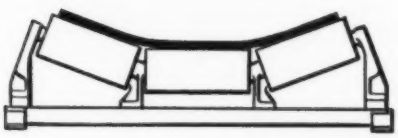
THE GENERAL ELECTRIC CO. LTD., MAGNET HOUSE, KINGSWAY, LONDON, W.C.2

F.C.83



Troughability

. . . . another reason why ***Pluvicor is in greater demand than any other Fire Resistant Conveyor Belting***



Troughability is one of the chief characteristics of Pluvicor belting. Pluvicor Conveyor Belting runs straight on the conveyor when empty because it is properly designed. Its ample body supports the load without sagging between idlers and transversely it is sufficiently flexible to trough naturally loaded or empty—an essential condition for straight running. This excellent troughability is one more reason why Pluvicor gives trouble-free performance and is yet another reason why more and more Pluvicor is going into the mines.

BTR PLUVICOR
FIRE RESISTANT CONVEYOR BELTING

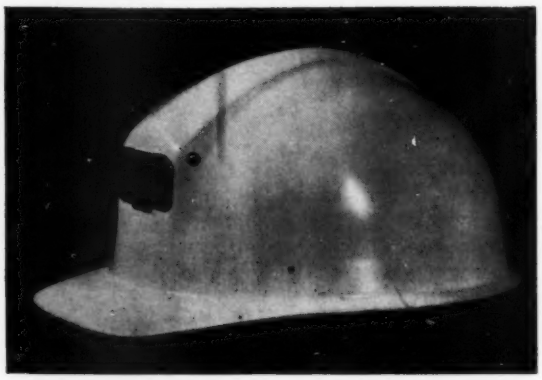
N.C.B. APPROVED

ENGINEERS IN RUBBER BTR BRITISH TYRE & RUBBER CO. LTD

HERGA HOUSE · VINCENT SQUARE · LONDON · S.W.1

D1125

TOUGH and MOISTURE PROOF

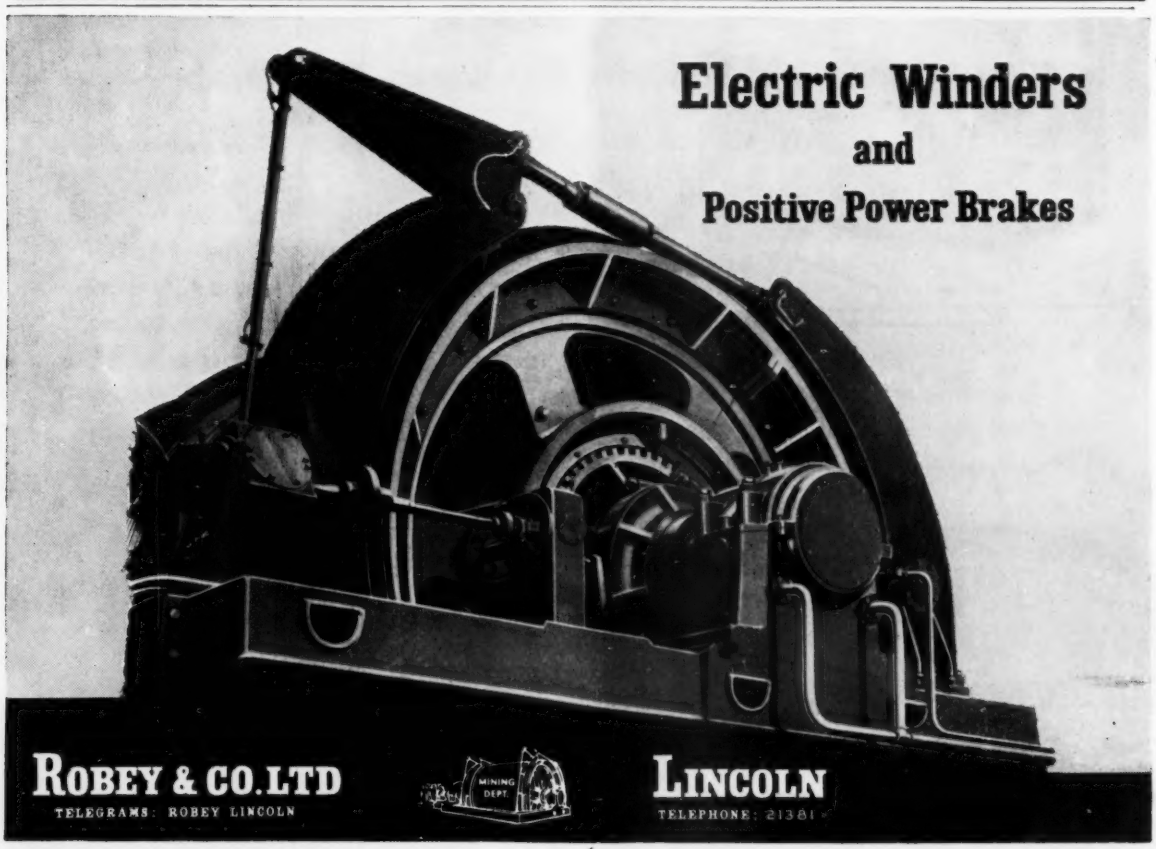


The special features of this helmet are toughness with complete resistance to moisture and high resistance to chemicals. The shape has been designed to give increased comfort and improved appearance. It is generally supplied in white, but it can also be finished in black. Lamp brackets are optional.

CROMWELL MINER'S HEADWEAR

Obtainable direct from:—

HELMETS LIMITED, WHEATHAMPSTEAD, HERTS.



Electric Winders and Positive Power Brakes

ROBEY & CO. LTD
TELEGRAMS: ROBEY LINCOLN

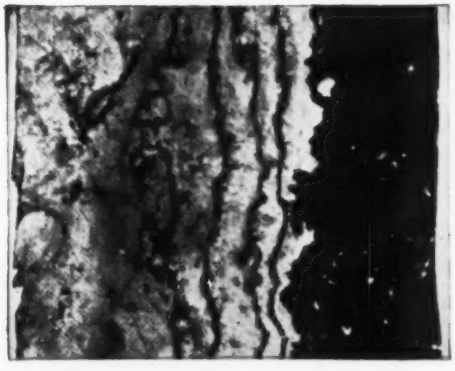
MINING DEPT.

LINCOLN
TELEPHONE: 21381

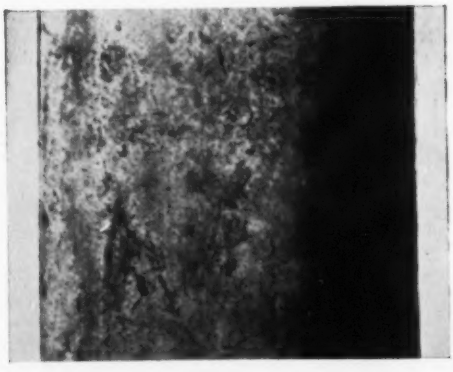
Safety

FIRST

...and made to **LAST**



Above : 5-ply rubber. Below : 5-ply PVC belting. Both after 700 hours abrasive testing



CONVEYOR BELTING MADE WITH GEON PVC

First and last in research, British Geon has taken a pioneering role in the development of polyvinyl chloride plastics for use in fire resistant conveyor belting.
In addition to its widely recognized properties as a fire resistant material, Geon PVC is superior under all conditions of service.

ABRASION RESISTANCE

Tests made on five-ply rubber and five-ply PVC belting have demonstrated the superior abrasion resistance of Geon PVC. Whereas the rubber covers were stripped in twelve hours, the covers made with PVC were not appreciably worn in 100 hours. On continuing the test to 700 hours, the rubber belt was entirely worn away in places while with the PVC belting only the first ply was affected.

RESISTANCE TO OIL AND GREASE

Belting made with Geon PVC, being chemically inert, is completely resistant to the action of oil and grease.

Geon PVC materials are polyvinyl chloride plastics. Please write for descriptive booklet No. 112 free on request.

Geon
Polyvinyl Materials

'Geon' is a regd. trade mark

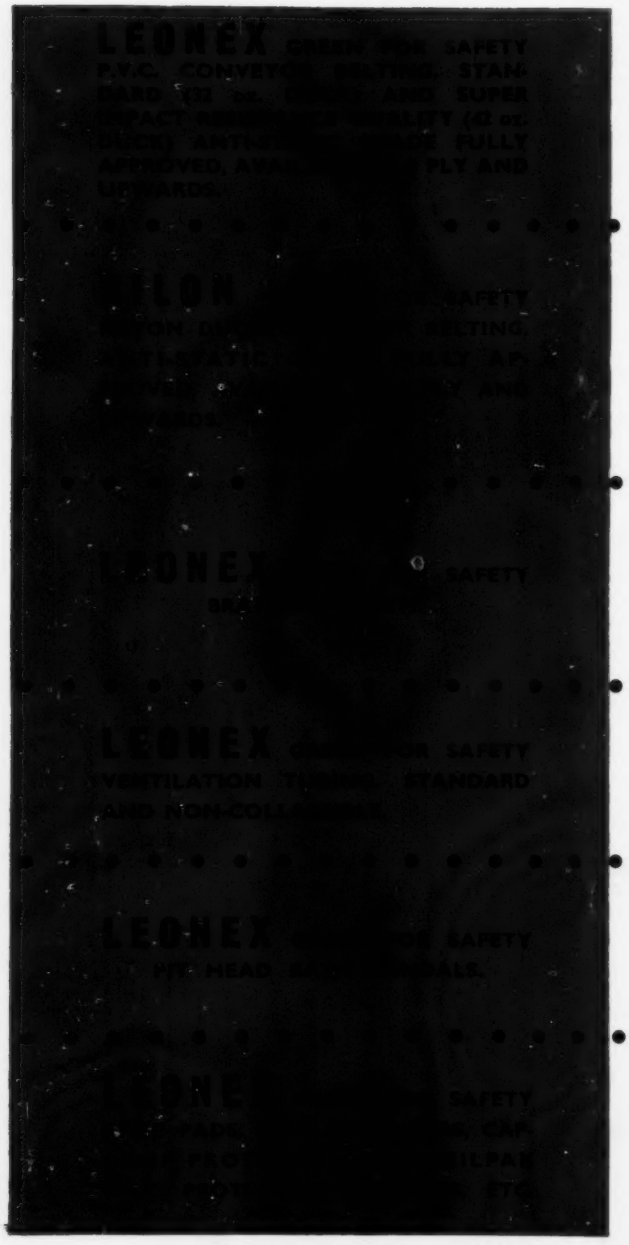
Geon PVC for Safety and Economy

BRITISH GEON LIMITED

Sales and Technical Service
DEVONSHIRE HOUSE PICCADILLY LONDON W1 TEL MAYFAIR 8867

RIL Green for safety

PRODUCTS FOR THE MINING, QUARRYING AND ALLIED INDUSTRIES



Full N.C.B. approval and conforms to B.S.S. 490/1951 Specification for rubber belts. The *original* P.V.C. multiply flame proof belting. Over 4½ million feet in use by May 1956. Matt surface covers, giving maximum co-efficient of friction.

4-ply Rilon equals 6 plies of Standard 32 oz. Cotton Duck Belting. Less weight, more flexibility, lower installation, running and maintenance costs. Full N.C.B. approval, and conforms to B.S.S. 490/1951 Specification for Rubber Belts. Matt surface, giving maximum co-efficient of friction.

Non-inflammable, Anti-static, tougher and highly resistant to acidic water and abrasion. In use it has been shown to have up to five times the life of ordinary Brattice Cloth. Full N.C.B. approval.

Non-inflammable, Anti-static; passed N.C.B. flame-proof tests. Very tough, resists acidic attack and abrasion. The answer to all Ventilation problems.

Designed to offer protection against 'Athlete's Foot' inexpensively and efficiently. Non-absorbent sole and vamp. Medically approved.

A wide range of ancillary products including those mentioned, with the design accent on safety and efficiency, in keeping with the R.I.L. policy of "safety in the mines."

RUBBER IMPROVEMENT LTD.

RILEX WORKS, WELLINGBOROUGH, NORTHANTS. WELLINGBOROUGH 2218

The Mining Journal
Established 1835

Vol. CCXLVI No. 6305 LONDON, JUNE 22, 1956 PRICE 9d.

CONTENTS

Notes and Comments 767
The Coal Industry 769
The World's Nickel Resources 770
Thoughts on the Steel Boom 772
Bringing Winkelhaak to Production inside of Two Years 773
Experimental Oil-Shale Mine in Colorado, U.S. ... 774
Technical Briefs 775
Reviews 775
Mining Miscellany 776
Metals, Minerals and Alloys 777
Growing Confidence in F.S. Geduld 779
Company News and Views 780
Company Meetings and Announcements 784
Société Minière du Bécéka; Triefus and Company Limited; British-Borneo Petroleum Syndicate Limited; The Central Mining—Rand Mines Group; Selection Trust Limited

Published by The Mining Journal Ltd., at 15 Wilson Street, Moorgate, London, E.C.2. MONarch 2567 Subscription £2 5s. per annum

NOTES AND COMMENTS

China as a Metal Exporter

Although trade with Communist China is still hamstrung by the embargo on exports from the Western nations, there are indications that the latter countries are becoming less intransigent in their outlook, partly because competition in free world markets is becoming increasingly severe and partly because of a growing realization that the only nation likely to benefit from the existing restrictions is the U.S.S.R.

The resumption of more normal trading relations with China must inevitably result in the reappearance of Chinese metals in the markets of Europe and North America, and it seems probable that this development will not be long deferred. According to the current issue of the *China Trade and Economic News*, China has already indicated her willingness to resume the export of tungsten ore to Western Europe, although it would appear that no definite offers have so far been received.

For many years China was by far the largest producer of tungsten ores. During the 25 years from 1913 to 1937 she contributed about 37 per cent of the world's supply. Production is again being expanded and it is believed that in each of the years 1953 and 1954 the output of wolfram concentrates amounted to some 20,000 tons, equivalent to nearly half the total world production. It has been reported that the mines of Kiarsi and Kwangtung are being mechanized as part of the First Five-Year Plan which envisages a target of 30,000 tons for 1957. China's reserves of tungsten ores are estimated at more than 1,000,000 tons.

Before her economy was disrupted by the Japanese invasion, China was also responsible for the greater part of the world production of antimony, her contribution in 1937 amounting to 14,702 tons. After dwindling to almost negligible proportions, the Chinese antimony industry has been substantially restored since the war and for several years production has been in the region of 8,000 tons a year. Chinese competition was among the uncertain factors referred to at the annual meeting of Consolidated Murchison, when the chairman, Mr. B. L. Bernstein, described the antimony market as "quite unpredictable".

China has deposits of anthracite which are estimated to exceed 400,000,000,000 tons, far surpassing those of all other countries combined. She has been an exporter of iron, lead, tin, zinc and mercury and is known to have deposits of many other minerals, some of which have been worked to a limited extent. It would be unrealistic to allow idealogical considerations to obscure the fact, which appears to be fully established by the reports of impartial observers, that under the present regime China's economy is being expanded at a far greater rate than at any previous period in the history of a country which for many centuries has diligently sought to model the present on the past. In the blue print for the new China now rapidly taking place, the development of the country's immense and doubtless still largely undiscovered resources will obviously take a leading place.

According to the *News-letter* geological prospecting is being extensively undertaken and has resulted in important finds. It is claimed, for example, that production of manganese ore in Central-South China reached a level of 79,000 tons in 1937 and that many new deposits have since been established. The report also refers to a substantial deposit of magnesite in Liaoning and states that a mine between Haicheng and Kaiping had an annual output of 100,000 tons under the Japanese, who also developed some production of molybdenum and vanadium in the north-east.

If the pattern of progress follows that of other large countries with abundant minerals, by far the greater part of the mine production will initially be exported, but in the course of time the development of secondary industries will lead to the expansion of metal refining and the establishment of engineering and metal processing industries within the country.

Statements by Chinese leaders suggest that the tempo of industrial development has exceeded expectations. *Eastern World* quotes Vice-Premier Li Fu-chun as stating that China's total industrial output had risen by 65 per cent in terms of value in the past three years and that all targets had been surpassed. Po I-po, director of the third office of the State Council, speaking at the National Conference of Advanced Workers in Peking, said that the 1955 output of pig iron at 3,620,000 tons was 15 times higher than that of 1946, steel production at 2,850,000 tons was 18 times higher, coal at 93,170,000 tons 3 times higher, and cement

at 4,500,000 tons 6.8 times higher. Po I-po also declared that China could now make many products which she had never manufactured before, including seamless tubes, silicone steel, aluminium ingots and products, heavy steel rails, training planes, 6,000 kW steam power generating equipment, and cargo steamers. He added that soon China would also be able to turn out motor cars, aeroplanes and tractors entirely made within the country.

The achievements of the Communist regime in the economic field are already far too impressive to allow the prospect of Chinese motor cars and tractors to be dismissed as a mere opium dream. Assuming that Po I-po's prognostications are broadly correct, it may well be that within the next ten to twenty years China will take her place among the leaders of world industry, although at this stage all that can be said is that a promising start on an enormous programme of development has been made.

Hope for Overseas Mining Investments?

It will take pages of a future history book to deal at all adequately with the Trinidad oil deal, and with the reactions that it has produced in the United Kingdom. The facts of the case are fairly simple and the outstanding one is that at the present time net investment in the sterling areas of the Commonwealth is virtually nil. The capital required does not exist and it would be inflationary to call it into being. But what has characterized the public discussions of the deal is the obstinate refusal to face facts on the part of those opposed to it. The many devices suggested for keeping control of the company in British hands (ranging from an investment by the C.D.C. to a British seat on Aramco) are a tribute to the ingenuity of their authors. But they do not take account of the real trouble that British taxation in general, and of overseas interests in particular, is cripplingly high. Nevertheless, the future historian will carefully examine the more exotic of these suggestions as an indication of the deep emotions aroused by the deal. It may well prove to be a turning point.

Mr. Macmillan, in announcing his pledge for tax relief for British firms pioneering in overseas countries, was careful to point out that the pioneer concession would not have made the slightest difference to the Trinidad deal for the company was not by any definition a pioneer. Formally he was right; nor does this concession offer any relief to existing British domiciled mining companies. But it is impossible to dismiss as imaginary the connexion between his announcement and the Trinidad case.

His announcement was remarkable. It is not often that a Chancellor of the Exchequer pledges himself to a tax concession in a budget nine months away, pledges it retrospectively (which is an admission that it ought to have been in the last budget and an invitation to firms to take note of it in their forward planning) and pledges it in the fag-end of the committee stage of the finance bill. The concession promised is one which will please the British Overseas Mining Association which has campaigned for it (among others) and will particularly please the underdeveloped territories which have granted tax holidays, since, under the present rules, these territories are simply making a present of taxes to the British Exchequer. But it is only a small concession, even if the Chancellor in promising to extend the relief to other than Commonwealth countries went further than Mr. Leather's clause had asked.

However, this was not all he promised. He promised to give very serious consideration to the possibility of implementing the Royal Commission's recommendation on overseas taxation that there should be set up a special category of overseas trading companies which would pay U.K. income tax only on distributed profits. "I am not without hope," he added, "that we can deal with the larger question." More than that he could not say or be expected to say. After all, we still have an economic crisis, and a concession which will cost £75,000,000 will clearly shape the lines of any budget in which it is made.

Of course, this sort of concession, made years ago, might have made a good deal of difference to the Trinidad case. Mr. Macmillan must have had this well in mind. He must also have been thinking of how many other U.K. enterprises overseas there are, basically economically sound, which are sitting ducks for take-over bids for foreign companies which, operating under more agreeable tax systems, can extract from them a higher rate of profit. Indeed a cynic might be tempted to say that one more fair-sized take-over of a British investment in the Commonwealth and that £75,000,000 concession will be in the bag.

To sum up, the Trinidad affair has caused a great deal of genuine distress—and done a lot of good. Meanwhile, British overseas mining interests can take comfort from this encouraging concession which has dropped out of the skies and from the fact that though Chancellors of the Exchequer may not always listen to reason, they cannot escape the hard facts of economic life. But Chancellors have still to learn a good deal about the economics of extractive industries—whether domiciled at home or abroad.

Current Position of the West German Non-Ferrous Metals Industry

The existing state of the West German non-ferrous metals industry was briefly reviewed recently by a spokesman of the West German Economics Ministry. Addressing the annual meeting of the Association of West German Metal Traders at Wiesbaden, he pointed out that the total sales of the West German non-ferrous metal industry increased last year by about D.M.500,000,000 to more than D.M.4,000,000,000, part of the rise being due to higher prices. Production of non-ferrous metals has also increased, the output of aluminium, lead, zinc, copper, tin and nickel being approximately 10 per cent higher than in 1954, while consumption of these metals totalled about 1,200,000 tons, some 125,000 tons more than was consumed in 1954. Adequate supplies of tin have been difficult to secure in the face of a world consumption that rose while simultaneously production remained at approximately the same level As has been foreshadowed in these columns, the spokesman stated that his government intends to reexamine the question of whether or not to join the International Tin Agreement when it becomes effective.

Output of semi-finished metal goods rose from 645,000 tons in 1954 to 716,000 tons last year and that of metal castings from 148,000 tons to 187,000 tons. Some 64 per cent of West Germany's non-ferrous metals requirements were covered by ingot supplies last year, in comparison with the 54 per cent necessary in 1954. Imports of non-ferrous metals, including ores, scrap and raw metals, thus rose from D.M.1,700,000,000 in 1954 to D.M.2,350,000,000, while over the same period exports increased from D.M.557,000,000 to D.M.700,000,000.

Last year consumption of copper in West Germany rose to 440,000 tons from 238,000, despite the fact that the price consumers were forced to pay was comparatively high because all domestic requirements were of necessity covered by imports. Supplies of lead and zinc were easier, consumption of lead at 240,000 tons showing an increase of 6 per cent, while consumption of zinc at 245,000 tons was 15 per cent over the previous year.

Severe handicaps to development were experienced in the case of aluminium and nickel supply. In so far as aluminium was concerned, the rapid rise in West German consumption tends to make the country increasingly de-

pendent upon imports, as domestic production could be expanded only with difficulty owing to the high cost of electric power. Similarly, more than half of West Germany's requirements of nickel had to be covered by "grey" market supplies.

The Coal Industry

(From Our Coal Correspondent)

With the recent Saar agreement the danger of active discord within the European Coal and Steel Community appears to have receded. As mentioned in *The Mining Journal* of May 25, a grave danger existed that French insistence on the canalization of the Moselle River and her right to exploit the Warndt Coal Mines in the Saar, might precipitate a severe clash with Western Germany where powerful vested interests were strongly opposed to the French demands.

The outstanding feature of this Saar agreement is that both sides have made appreciable concessions. The principal points of the agreement are that the Saar will be reunited politically with Germany on January 1, 1957, and economic integration will be brought about by stages over the next 3½ years. Despite internal pressure Dr. Adenauer has agreed to the construction of the Moselle Canal, the cost to be divided fairly equally between the two countries. The problem of the Warndt Coal Mines has been solved by compromise, the basis of which is that during the next 20 years France will be allowed to work 66,000,000 tons of coal from the Warndt deposits. In addition, France will be able to buy a further 24,000,000 tons of coal at cost price from German operated Saar collieries.

EUROPE'S ENERGY GAP

Western European consumption of all forms of energy is rising so rapidly that it is likely to reach the equivalent of 1,200,000,000 tons of coal in 1975 as against 730,000,000 tons last year. This estimate is given in a recently published report by the O.E.E.C. Commission for Energy, which reveals that by 1975 production of primary energy on the basis of present plans would amount to only 750,000,000 tons coal equivalent—63 per cent of requirements. Adding to this an estimated 80,000,000 tons coal equivalent contributed by nuclear energy the deficiency is seen to be 370,000,000 tons coal equivalent. This gap will need to be filled by massive imports of coal and oil estimated to cost some $5,000,000,000 each year. Such a drain will present European countries with a serious problem as regards their balance of payments. The report calls upon Western European countries to invest almost $150,000,000,000 between now and 1975 in developing energy sources, and stresses the need for expanding coal production capacity calling for a $10,500,000,000 investment in Europe's coal mines. Britain recently announced plans for spending a further $2,800,000,000 on her state-owned mines over the next ten years, in addition to the $1,000,000,000 spent since 1950.

U.S. COAL EXPORTS

Coal exports from the U.S. are reported to be running at a rate which promises to establish a new peak in the export business. At the moment the country is exporting at the rate of 43,000,000 tons per year—only a little below that of the 1947 record figure—but demand from overseas is increasing monthly and some exporters are predicting that 1956 will see 50,000,000 tons shipped for export.

So brisk is demand that the U.S. coal operators, the mineworkers union and the chief coal-carrying railways have formed a $50,000,000 corporation to purchase ships in order to enter directly into the coal exporting business. Rail and coal operators have recently been disturbed by the wide fluctuations in ocean shipping rates and feel that this instability may sooner or later adversely affect the coal export boom. No doubt this formidable combination will skim a lot of the cream off the coal export business at the expense of existing shippers, and should lead eventually to lower shipping costs.

RUSSIAN VISIT

Just back from a four week tour of Soviet coalfields, a British technical mission has spoken favourably of the post-war recovery of the Russian coal mining industry, which has doubled its output since 1940. The twelve members of the British party were particularly impressed with Russian soft rock tunnelling machines; shield mining for steep, thick seams, rapid shaft sinking with power loading, the standardization of surface and underground planning; technical education in engineering; the existence of a separate Ministry of Coal Construction to act as contractor for the Ministry of Coal Production; and the underground gasification site at Podzemgas, near Moscow.

Probably the highlight of the tour, as far as the British team was concerned, was the Russian experimental hydraulic colliery in which coal was sluiced off the face and pumped to the surface. This method is not suitable for every type of coal deposit, but the possibility of applying it in this country is to be examined. On the other hand, the team felt that the Russians had much to learn from the British mines, particularly in power loading and the layout of underground transport. A Russian mission is at present in this country on a return visit.

FURTHER N.C.B. PRICE BOOST

What the team did not report on was the cost of Russian coal, so one cannot tell if we can teach them anything in this respect. However, while the mission was in Russia the Coal Board put up prices for British coal for the umteenth time. This rise amounts to a price lift of 8 per cent, an average of 6s. per ton on pithead prices. It is expected that this increase will bring in about £35,000,000 in 1956 and £61,000,000 in a full year's working, thus enabling the N.C.B. to reduce its accumulated deficit of £37,000,000 to about £15,000,000 by the end of 1956 and to earn a substantial surplus in 1957. The chairman of the N.C.B. has stated this week that barring quite unforeseen eventualities, prices are to remain pegged at the new level for the next 12 months.

UNDERGROUND GASIFICATION

In the Commons, the Minister of Fuel and Power this month reported that a pilot plant for the underground gasification of coal is to be built. This is the latest development in a series of trials carried out at two sites in the Midlands over the last six years. Several hundred million cu. ft. of gas have been produced at these sites, but the largest single trial system so far has only maintained a rate of about 20 tons of coal gasified a day—sufficient to generate up to 800 kW. A full scale commercial system would probably have to be capable of generating 10,000 kW. and the preliminary pilot plant is likely to be a section of such a system with a gasification capacity of 50 tons of coal daily. A report on the six years of trials concludes that in favourable circumstances gas made by burning coal underground could be produced at a much less cost than 3d. per therm. It is estimated that there are more than 500,000,000 tons of coal in the U.K. which are uneconomical to mine and although not all of this could be considered suitable for underground gasification there are sufficient reserves to permit extensive development of gasification plant.

The World's Nickel Resources

The persistent shortage of nickel is accelerating the expansion of production and has given renewed impetus to the search for additional sources of supply. This survey of known resources is based on *Nickel in Canada*, a publication issued by the Canadian Department of Mines and Technical Surveys, Mines Branch, which includes a survey of world conditions. The author is W. R. McClelland, of the Mineral Resources Division.

The nickel ores that constitute the major sources of the metal fall into three principal classes: sulphide ores, silicates or oxidized ores, and nickeliferous iron ores. Arsenical ores, usually containing both nickel and cobalt, account for only a small production.

SULPHIDE ORES

The largest reserves of developed sulphide ores of nickel are situated in the Sudbury district of Ontario. These will be surveyed in a subsequent article devoted to the nickel resources of Canada, which for many years has been by far the world's largest producer, accounting for over 80 per cent of the entire output.

Next in relative importance to the Sudbury ores are the Lynn Lake deposits of Manitoba, the Karelo-Finnish Petsamo deposits of Russia and the Merensky Reef deposits of South Africa.

Alaska:—The deposits of Bohemia Basin, Yakobi Island, south-eastern Alaska, are reported by the U.S. Bureau of Mines to contain over 10,000,000 tons of material with a nickel content of 0.36 per cent and copper 0.27 per cent.

South Africa:—Several undeveloped occurrences are found in South Africa. The magmatic nickel-copper deposits in East Griqualand are of considerable prospective interest. The ore occurs in flat sheet-like bodies and veins of massive sulphides and as disseminated ore. In the latter the nickel content ranges from 0.35 to 1.9 per cent and the copper from 0.35 to 1.95 per cent.

Russia:—Nickel-copper sulphide deposits are known in the Norilsk area of north-western Siberia, and in the Kola Peninsula in northern Russia.

Norway:—A number of relatively small, low-grade deposits have been explored and worked in Norway.

Philippines:—A nickel-platinum deposit has been discovered in west-central Luzon, Philippine Islands, on which drilling has indicated a reserve of from 200,000 tons to 250,000 tons averaging 1.5 per cent nickel.

United States:—A complex lead-copper-nickel-cobalt deposit occurs at Fredericktown, in the lead district of south-eastern Missouri. A plant has been erected to treat the ore and an annual output of about 900 tons of nickel is expected. Measured and indicated ore reserves are reported as 1,775,000 tons averaging 2.3 per cent lead, 1.4 copper, 0.28 cobalt and 0.46 nickel.

NICKEL SILICATE AND OXIDIZED ORES

Before 1905, nickel silicate ores were the world's principal source of nickel. The figures for silicate ore reserves are, in general, less accurate than those available for the larger sulphide deposits, but the nickel content of the world reserves of these ores, grading about 3 per cent nickel in selected and sorted ore, is estimated to equal or exceed that of the larger, developed sulphide deposits.

New Caledonia:—La Société le Nickel controls the principal deposits of this island. The ore, garnierite, occurs as a hydrated silicate of nickel and magnesia. The sorted or

PRINCIPAL WORLD OCCURRENCES OF NICKEL

1. Canada, *Sudbury Area.*
2. Canada, *Lynn Lake.*
3. Canada, *Western Nickel.*
4. Canada, *Rankin Inlet.*
5. Alaska, *Yakobi Island.*
6. United States, *Riddle, Oregon.*
7. United States, *Fredericktown, Missouri.*
8. Cuba, *Levisa Bay and Moa Bay.*
9. Venezuela, *Loma de Hierro.*
10. Brazil, *Sao Jose do Tocantins.*
11. New Caledonia.
12. Borneo, *Seluku.*
13. Celebes, *Larona.*
14. Philippines, *Surigao.*
15. Japan, *Honshu Island.*
16. Madagascar, *Nickelville.*
17. Greece, *Atalante, Larymna.*
18. Union of South Africa, *Merensky Reef.*
19. Union of South Africa, *Griqualand East.*
20. Russia, *Petsamo.*
21. Russia, *Kola Peninsula.*
22. Russia, *Central and Southern Urals.*
23. Russia, *Norilsk.*

selected ore is currently maintained at a grade of about 3.5 per cent. Mining is by open-pit methods. Production of ore increased from 138,000 tonnes in 1950 to 996,000 tonnes in 1955. The company reports that the reserves are adequate to maintain an annual output of 12,000 tonnes of metallic nickel for 80 years.

United States :—A nickel silicate deposit is under development by the M. A. Hanna Company at Riddle, Douglas County, Oregon. Open-pit mining is employed. Drilling has indicated beds containing over 6,000,000 tons of ore grading 1 to 2 per cent nickel. Plans call for a minimum production of 47,500 s.tons of nickel in the form of a ferro-nickel alloy with a 25 per cent nickel content. Since July, 1954, smelter production has been expanded, reaching a monthly figure of nearly 400 tons in October, 1955.

Brazil :—A number of nickel silicate deposits are found in Brazil. In the State of Goias some 50 deposits occur in an area of 14 sq. miles north of Sao Jose do Tocantins. The district as a whole is estimated to contain as much as 16,000,000 tons of ore averaging between 1 and 3 per cent nickel. The ore beds are from 10 to 60 ft. deep with an overburden ranging from a few feet to 15 or 20 ft. Small deposits have been mined and smelted in the Minas Geraes region. At Livramento there is a probable reserve of 250,000 tons and a possible reserve of 2,000,000 tons with a nickel content of 1.5 per cent. Deposits at Ipanema in the same region contain about 200,000 tons of ore grading 1 to 2 per cent nickel and 2,000,000 tons of possible ore of the same grade.

Venezuela :—Large low-grade nickel silicate deposits have been explored at Loma de Hierro. International Nickel have sampled an area 10 to 12 miles long and more than half a mile wide. Reserves are reported to exceed 30,000,000 tons containing about 1.75 per cent nickel, together with small percentages of cobalt and manganese. The deposits lie in beds of clayey weathered material 30 to 100 ft. thick. The beds lend themselves to mechanized mining by open-pit methods, but the ore is too low-grade to be treated economically by current smelting practices.

OTHER DEPOSITS

Russia :—Extensive reserves of nickel.silicate ore in the central and southern Urals comprise a large part of Russia's nickel resources. The Khalilovo deposit in the Southern Urals was reported in 1933 to have a reserve of 15,600,000 tonnes containing 1.54 per cent nickel. The neighbouring Aktyubinsk deposit is smaller and of lower grade, containing 14,000,000 tonnes of 0.72 per cent nickel.

Greece :—There has been some production at various periods from garnierite deposits in the Atalante-Larymna district. Deposits of nickeliferous iron also occur in the same region. The German firm of Krupp has recently constructed ore dressing and metallurgical plants capable of treating 130,000 tons of nickel ore annually and operations were resumed in 1955. The reserve of silicate ore is reported to be 500,000 tons averaging 2.5 per cent nickel.

Celebes :—Several deposits of nickel silicate occur on the island of Celebes. Geological conditions indicate a probable reserve of about 2,000,000 tons containing 3 per cent nickel, and a possible reserve in excess of 10,000,000 tons grading between 1 and 3 per cent. The orebodies are irregular, occurring locally as earthy masses. The two principal regions are on the eastern side of the Gulf of Bone, but other favourable prospects occur in the districts of Soroaka and Balang.

Madagascar :—Small deposits of garnierite ore are found in the Nickelville district, Alaotra region of Madagascar in association with partly serpentized rocks. Reserves are estimated at 900,000 tons containing 4.2 to 8.5 per cent nickel.

Tanganyika :—A deposit of garnierite and nepouite at Kabulwanyele is reported to contain about 5,000,000 inferred tons of nickel ore carrying up to 0.72 per cent.

NICKELIFEROUS IRON ORES

Nickeliferous iron ores constitute the world's largest potential source of nickel, but the low nickel content and the refractory nature of the ores has limited their development. The average nickel content ranges from a little above to a little below 1 per cent. Processes of recovery are relatively costly.

Cuba :—Extensive deposits of low-grade nickeliferous iron ore occur in Oriente and Camaguey provinces on the north-eastern coast. The Nicaro deposits, Mayari district, consist of three indistinct layers. The upper layer, 4 to 8 ft. thick, is a red, haematitic ore, averaging about 0.8 per cent nickel and 49 per cent iron. The middle layer, 8 to 12 ft. thick, consists of limonitic ore containing about 1.3 per cent nickel and a little over 50 per cent iron. The bottom layer, from 2 to 10 ft. thick, is composed of disintegrated serpentine and contains about 1.6 per cent nickel and 22 per cent iron. This mode of occurrence is typical of the deposits found in the three major districts Mayari, Moa and San Felipe. The total reserves of nickeliferous iron ore in these districts are estimated at about 3,000,000,000 tons.

The Nicaro Nickel Company developed the deposits in the vicinity of Levisa Bay during World War II. About 31,000,000 tons of lateritic ore containing 1.45 per cent nickel were outlined. Production in the form of nickel oxide began in 1943 and continued until 1947. Difficulty was encountered in treating the serpentine ore and it was necessary to use a proportion of the middle layer ore. As a result, the overall reserves were reduced to 24,000,000 tons grading 1.45 per cent nickel. Operations were resumed in 1952, the plant being owned by the U.S. Government. In 1955 production amounted to 15,150 s.tons.

In April, 1953, Freeport Sulphur Company announced the location of a large nickeliferous iron orebody amenable to treatment in the vicinity of Moa Bay. Extensive exploration has indicated 40,000,000 tons of ore averaging 1.35 per cent nickel and 0.14 per cent cobalt. The company proposes to erect a plant with an initial output of 15,000 s.tons of nickel annually. It is hoped that plans under development by Bethlehem Steel and Freeport Sulphur for producing nickel from low-grade Cuban ores will increase supplies by some 50,000 tons a year, if the process is successful.

Greece :—A reserve of nearly 10,000,000 tons of lateritic iron ore reported to contain about 1 per cent of nickel is found in the Atalante-Larymna district.

Russia :—Complex ferro-nickel and iron-nickel-cobalt ores are found in the central and southern Ural mountains.

Celebes and Borneo :—Large reserves of nickeliferous iron ores have been prospected in these islands. In Celebes about 10 ore fields have been discovered, the most important field being the Larona, where proved reserves amount to 370,000,000 tons averaging 49 per cent iron with an indicated nickel content of about 0.9 per cent.

South-eastern Borneo has large deposits of lateritic nickeliferous iron ore, the largest of these being on the island of Seluku. Reserves have been estimated at about 500,000,000 tons with a nickel content averaging 0.66 p.c.

Japan :—The nickeliferous iron ore deposits on Honshu Island yielded a small output of nickel-bearing pig-iron during World War II. Reserves are estimated at about 63,000,000 tons with an average grade of 0.5 per cent nickel.

Philippines :—Occurrences in Surigao, Mindanao, have been prospected and reserves of 550,000,000 tons have been blocked out, with potential reserves of over 1,000,000,000 tons indicated. The iron content is 47 per cent with nickel averaging about 0.8 per cent.

Thoughts on the Steel Boom

(From Our Iron and Steel Correspondent)

Has the steel boom passed its zenith? To raise such a query at this juncture suggests an element of doubt; and it is certainly true that on both sides of the Atlantic there have been indications of a slight recession which may or not be of a temporary character.

American steel production has been running at a record rate, but a slight shrinkage, due principally to diminished buying of steel by the automobile industry, is anticipated in the third quarter of the year. Nervousness has also developed concerning the negotiation of a new wage agreement which must be completed before July 1 if a strike is to be averted.

WAGES AND PRICES

The workers have presented collective demands which, if only partly conceded, will involve a substantial increase in prices and the steel companies' resistance has been stiffened by the argument that any increase in wage costs would accentuate the difficulties of accumulating funds for an expansion programme which envisages the provision of an additional capacity of 15,000,000 tons during the next three years. Much, therefore, depends on the outcome of the wage negotiations. If those are peaceably concluded, U.S. steel chiefs anticipate a slight dip in the production figures for the third quarter, and thereafter a sharp recovery which would enable the plants to equal last year's record output of 117,000,000 tons.

Optimism in British steel circles has been similarly tempered by recent experience. Since an annual rate of 21,750,000 tons was attained in February last ingot production has steadily declined, and in May, steel output fell below that of the corresponding month in the previous year. Last month's decline is partly the result of loss of output during the Whitsuntide holidays and is due in part also to the overtime ban by the maintenance men at the steel works.

Meanwhile complaints of a steel shortage are still rife and it is significant that in the first four months of the current year iron and steel imports were running at the unprecedented rate of nearly 3,000,000 tons per annum, only 2 per cent less than the total volume of exports.

It is true that a very large proportion of the foreign material arriving in British ports consists of pig iron and semi-finished steel products which, after processing, are shipped abroad in the form of finished steel products or manufactures thereof. But the need for such large scale imports indicates the wide gap between supply and demand, and in some quarters the steel makers are held to be blameworthy for having failed to make better provision for the needs of consuming industries.

ESTIMATED REQUIREMENTS

It is, of course, easy to be wise after the event. Admittedly the estimates of steel demand have proved to fall considerably short of actual requirements. But these estimates were prepared after careful inquiry, and it would be difficult to sustain a charge of inertia against an industry which has been spending something like £60,000,000 a year on modernization of plant and extension of capacity.

Once again the question arises "how much steel will be required in the next quinquennium?" The answer to that question will largely determine the scope of the third steel development plan which is now engaging the active attention of the Iron and Steel Board. Again investment policy must be determined by estimates which may prove wide of the mark. Information is being sought from the chief consumers such as the engineering, ship building, motor, mining and transport industries as to the probable extent of their requirements and such information will be a decisive factor in the formulation of the next five year plan. The high capital cost is one of the most formidable problems associated with the further expansion of steel capacity in both hemispheres. Ultimately the outlay must be recouped out of profits, and that is one of the reasons which have tended to stiffen the resistance to recent and prospective advances in other costs of production. British steel makers profits have been reduced by about £15,000,000 per annum because of higher wages, higher railway freight charges and dearer coal, none of which were comprehended in the last advance of prices.

In the States the U.S. Steel Corporation has given a bold lead with the announcement of a project to increase capacity by 1,000,000 tons a year for the next ten years at a total estimated cost of 1½ billion dollars, whilst the Kaiser Steel Corporation has embarked on a scheme to increase the output of its steel mills at Fontana, California, by nearly 500,000 tons.

ROLE OF RESEARCH

These spectacular expansion programmes are supplemented by intensive research at a special centre into the new uses for steel with special emphasis on coating steel with plastics or aluminium, and on the production of better vitreous enamel coatings for steel sheets used in the building trades. American steel is also devoting closer attention to fundamental research, as well as to the more practical problems of reducing blast furnace costs, and of producing alloy steels which can withstand the even increasing temperatures encounted in the aircraft industry.

In this field of scientific research, British steel has not been inactive, and the practical work of the Research Association under the direction of Sir Charles Goodeve has already resulted in the increased productivity of conventional processes, and the establishment of new methods. It is claimed that the improved design and operation of new steel furnaces are due in no small measure to the application of results obtained from laboratory studies of aerodynamics and heat transference.

The change from gas firing to oil, or to combined oil and coke oven gas fuel has made it possible to simplify furnace design and achieve more flexible results, whilst oxygen enrichment of the air blast has not only speeded production but has also enabled the makers to produce types of steel with a much lower nitrogen content than that made by conventional convertor processes.

These and other examples of the successful alliance of science and industry, encourage the highest hopes of future progress. A rise of 50,000,000 tons in the annual output of steel in the last ten years, has not yet brought the world within sight of satiety. Western Europe, as represented by the six constituent states of the European Coal and Steel Community reached an all-time record output of 4,602,000 ingot tons in May, and Germany is now ahead of the U.K. in the production race. But British steel prices are still below Continental levels, and as competition for foreign trade intensifies, this price advantage promises to become a decisive factor in the continuance of the nation's industrial prosperity.

Bringing Winkelhaak to Production inside of Two Years

(From Our South African Correspondent)

While the rest of the world sees automation as its salvation or damnation, the gold mining industry here is busy having second thoughts on the merits of all-out mechanization as a possible solution to its problems. This is best summed up in the directors' review in the Anglo American annual report—"Mechanization has been and is being introduced wherever possible, but the limits to which it can be profitably resorted to are becoming apparent. The future of the problems created by labour shortage would seem to lie more in the direction of the introduction of methods of inducement to greater production by available personnel".

It may be recalled that a couple of years ago, the introduction of the cactus grab for shaft-cleaning resulted in the setting up of new world records for shaft-sinking and, at that time, it seemed that it was the solution to speedy sinking. But the last two records—Vaal Reefs and West Rand Consolidated—saw a reversion to hand lashing with highly trained teams. According to what we have heard from time to time the Basuto lashers found no difficulty in keeping ahead of hoisting capacity.

SHAFT SINKING AT WINKELHAAK

One question that is being asked is whether the time saved by intensive mechanization in sinking, say, a major shaft, does compensate for the delay involved in the period of preparation. In this connection, there is intense interest in the mining world in the techniques being used in opening up Union Corporation's new Winkelhaak property in the Kinross area.

The sub-outcrop of the reef is shallow, about 700 ft. The initial development consists of putting down two 11 ft. circular shafts approximately a mile apart, one on the sub-outcrop and the other at a point where the reef should be cut at around 1,200 ft. Parallel with each shaft is a ventilation winze. By means of the latter it will be possible to start large-scale development in each area immediately the shaft is bottomed without having to wait for a holing through. In fact, the mine could come to production without this.

Sinking operations are being conducted in the simplest possible manner. There is no grab, no Galloway stage or waste-tipping devices. The permanent headframes were put in at the start and temporary hoists operate a kibble. The operating cycle is to maintain two advances of 5 ft. a day, with the third shift being used for equipping. When the loaded kibble surfaces it is lowered on to the undercarriage of a cocopan and pushed by hand to a small waste pile and dumped. Both shafts are on very small hillocks so that the rock dump is extended horizontally so that no mechanical power is needed to handle the kibbles. No time at all was wasted in preparing for sinking which started up in the middle of January and up to the end of last month over 2,000 ft. of sinking in shafts and winzes had been accomplished.

Probably faster sinking rates could have been accomplished with more elaborate equipment, but it is argued that this would probably have delayed the actual start and the end figure would not have been much better. In addition, the capital costs would have been greater. The position is that the shafts will be on reef and underground development started very much ahead of the estimates when the company was first floated and, in consequence, the production date will be correspondingly advanced.

An important principle being applied in the opening up of Winkelhaak, is the elimination as far as possible of the use or erection of temporary equipment or buildings. The engineers take the view that, firstly, considerable time is wasted and, secondly, in the long run such practices are expensive and add unnecessarily to pre-production expenditure.

THE NEW APPROACH TO PLANNING AND ERECTING SURFACE BUILDINGS

So far as buildings are concerned, the line being pursued is to make their use flexible. It was found, for example, that the permanent workshop buildings of prefabricated steel could be put up quickly. The whole set were erected.

Reference was made some little time back to the time saved in bringing Hartebeestfontein to production by departing from the traditional system of the erection of the buildings needed and the installation of the reduction plant by the mining company itself and sub-contracting the job out. There the usual time was cut from 18 to 8 months. This principle is being taken further at Winkelhaak, where the permanent hoist set-up is being dealt with by outside firms.

As pointed out in respect of Hartebeestfontein, the outside contractor has a supply of skilled labour to hand, not available to the mines. There exists in South Africa a type of highly-skilled artisan who is prepared to work flat out on a specific job at high rates of pay and when it is finished knock off until he feels like working again. In short, he wants the most money in the shortest time. In addition, the contractor is able to mobilize equipment as needed, whereas the mine cannot afford to spend money on plant which might only be used for a short period and then have to be written off.

Winkelhaak is therefore being watched carefully by the mining world from the aspects of time and economics. Those on the job itself are justifiably cautious, but outside it is suggested that, all going well, milling could start in the second half of next year. This does not seem unreasonable in the light of the present rate of progress.

LOW CAPITAL COSTS

Turning to the financial side, it may be recalled that the prospectus suggested that the initial capital of £6,000,000 would be sufficient to put the two shafts down and complete a substantial amount of underground development and that a further £2,000,000 would be needed to complete the reduction plants to its initial capacity of 60,000 tons a month.

Taking Hartebeestfontein as a yardstick which came to production with a milling rate of 75,000 tons a month with the reef at a considerably greater depth at a cost of £9,000,000, it is being mooted in some quarters that Winkelhaak could start up at much below this figure—particularly in view of the economical way the property is being tackled taking full advantage of what has been done elsewhere. Some quarters go so far as to say that the whole job might be done on the existing £6,000,000.

Experimental Oil-Shale Mine in Colorado, U.S.

After completing a basic study of oil-shale mining in the United States, T. Ertl, U.S. Bureau of Mines, recently presented a paper on the subject to the American Institute of Mining and Metallurgical Engineers, from which the following article is condensed. The article is of especial interest owing to the specific site conditions of the experimental mine now in operation, and because of the low-cost mining methods used in exploiting the underground quarry.

The search for a site for an oil shale mine and plant was centered in Western Colorado because that area contains the richest and most extensive deposits known in the United States.

The surface of much of the oil shale plateau consists of sandy and limey shale which is essentially barren. Below the barren shale is a 400 ft. horizon of oil shale, while directly below is a 70 ft. thickness which includes a 25 ft. interval.

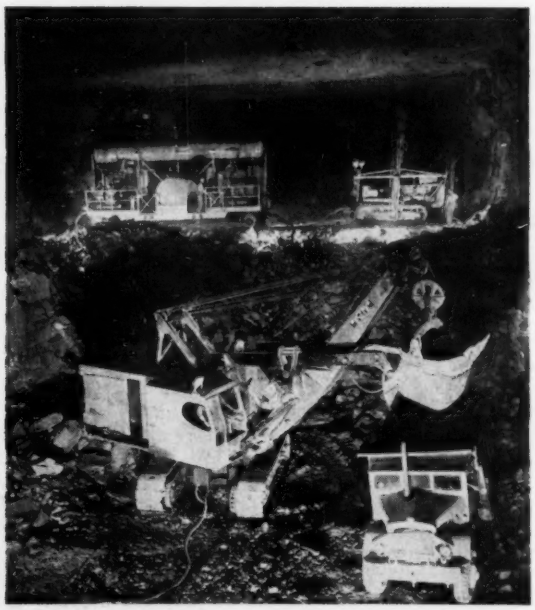
THE MINING SITE

Neither the 25 ft. or 70 ft. interval can be mined by surface methods on a large scale, since no sizeable area exists from which the overlying beds have been eroded. The low-grade overburden ranges in thickness from 300 to 1,000 ft. and averages 500 ft. The mining carried on by the Bureau of Mines will be from the 70 ft. section or from selected portions of the 70 ft. section. This interval also appears to offer the best opportunity for commercial exploitation.

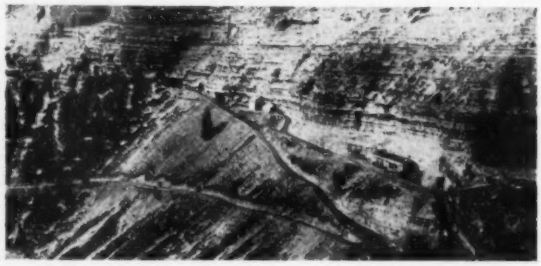
Investigations indicated that a site near Anvil Points, 10 miles west of Rifle, Colorado, and 200 miles west of Denver, was the most suitable for the development of a mine. This mine is at an elevation of 8,200 ft. above sea level, and at the base of the cliff that forms the outcrop of the 70 ft. section.

ROAD TO WORK AREAS

The construction of a road was begun as soon as the sites of the processing plant and mine were approved. The road has a general grade below 10 per cent. A mine yard of one acre in area was excavated at the base of the cliff. A combination warehouse and office building, a change house, a shop building containing the air compressors, and an oil house have been erected.



A 3 yd. Bucyrus-Erie electric shovel operating on the bench level. In background a portable utility station supplies compressed air to the benching jumbo



Mine yard and road carved in the oil shale cliffs

Mining is done in two areas. One has been developed for selective mining from various horizons in the 70 ft. bed; the second is being developed for mining the 70 ft. bed by underground quarry methods to demonstrate on a unit commercial scale low-cost oil shale mining methods.

A haulage adit driven in low-grade shale below the 70 ft. mineable section enters the cliff at a right angle. A parallel opening, called the ventilation adit, is in the mineable shale. Two vertical raises extend from the haulage adit through the mineable section to the roof stone overlying the 70 ft. bed. A short, inclined raise also has been driven from the ventilation adit to the roof stone. The tops of the raises are connected by a series of openings just below the roof stone. A fan mounted in the ventilation adit forces fresh air into the mine to all mine workings through the various openings.

A LOW-COST MINING METHOD

The underground quarry is being developed to demonstrate a low-cost mining method for exploiting the 70 ft. bed. The work will be done on a unit commercial scale. A horizontal opening, 25 ft. high and 60 ft. wide, directly under the roof stone of the 70 ft. mineable thickness of oil shale will form the top bench of the underground quarry. This horizontal opening will be extended in two directions; one along the strike and the other up the dip of the bed (5 per cent); pillars 60 by 60 ft. in area, comprising 25 per cent of the shale, will be left between the horizontal openings.

The section of shale that extends 22.5 ft. below the top bench will be mined as a second bench. In a commercial mine a third and lower face, also 22.5 ft. high, would be worked similarly to the second bench. The cost of mining would be the same from both the second and third benches; therefore, the third face need not be mined to determine the overall mining costs.

In order to mine at low cost, the operation will be mechanized. A drill carriage is being built with which two miners will be expected to drill enough holes to break over 1,000 tons of rock per shift. Adequate ventilation of the mine workings is a necessity, since diesel engines are used underground and relatively large quantities of explosives are required for breaking the rock; the ventilation problem has a high priority.

TECHNICAL BRIEFS

The Electrolytic Cleaning of Steel

In a systematic investigation of the baths used for the electrolytic cleaning of steel a new type has been encountered which successfully cleans all type of steel and can also be used for cleaning nickel and chromium. This bath is reported in *Revista de Ciencia Aplicada.*

The new bath, the H_2SO_4-CH_3OH-C_2H_5OH bath, is prepared as follows: Equal volumes of concentrated sulphuric acid (density 1.84) and methanol are mixed together, the mixture is allowed to stand for a minimum of about 24 h. and is then diluted with three times its volume of ethyl alcohol. The cleaning capacity of the bath increases with the degree of esterification of the sulphuric acid; under the conditions stated the degree of esterification is of the order of 80 per cent. The physical constants of the bath at 18 deg. C. are: density 0.978: viscosity 6.1 centipoises; specific conductivity 0.013 ohm $^{-1}$cm.$^{-1}$.

The bath operates at atmospheric temperature, and within a fairly wide range of comparatively low current density, from 0.1 to 0.4 amp./sq. cm. At higher current densities the quality of the cleaning declines as a consequence of gaseous discharge from the anode and the raising of the temperature of the bath.

The practical working conditions of this new bath, its cheapness and suitability for all types of steel (carbon, stainless and high-speed steel) as well as nickel and chromium, have made its use advisable for the electrolytic cleaning of steel.

New Nickel Plating Process

The Keystone Chromium Corporation, United States has completed the installation of equipment to chemically deposit nickel without the use of electricity. The new process permits plating to be completed on the inside of pipes.

Work started at the U.S. Bureau of Standards led to the discovery of the proper combination of chemicals to deposit nickel. A catalyst was required to permit the action to continue. That catalyst is nickel. As the nickel was deposited the solution became more acid and more dilute.

The deposited nickel coating, instead of being pure nickel, is 93 per cent nickel and 7 to 4 per cent nickel phosphide. It is a simple procedure to deposit this nickel coating on most metals, including aluminium. Subsequent heat treatment will produce a hard metallic coating upon aluminium, giving the metal many desirable characteristics.

Strengthening Metals

Crystals 150 times stronger than standard iron crystals and four times the strength of the strongest steel wire have been reportedly produced in the United States This new record for the strength of metals is claimed by the General Electric Company. The company reports that, in the laboratory, technologists have produced minute iron crystals with tensile strengths as high as 1,900,000 lb. p.s.i.

The crystals are thinner than a human hair and are less than 1 in. in length. Although at present only laboratory speciments, the crystals give rise to conjecture as to the possibilities of producing larger units of commercial significance.

The maximum strength of iron crystals is considered to be 2,000,000 to 3,000,000 lb. p.s.i. of tensile strength. In theory, if such strength potentials could be achieved, it would be possible to build girders no thicker than wire.

Electrostatic Separation Temperature Tables

Temperature ranges at which various minerals are most easily recovered by electrostatic separation are tabulated for the first time in a technical report released recently by the U.S. Bureau of Mines.

The report gives the results of tests at the Bureau's Eastern Experiment Station, in which certain minerals that could not be separated electrostatically at room temperature because of their identical electrical conductivity responded readily when heated to temperatures from 122 deg. to 1,112 deg. F. (60 deg. to 600 deg. C.).

REVIEWS

International Nickel on Canvas

Although we are perhaps old fashioned enough still to think of the patronage of the arts as being the province of the man of substance rather than of the substantial company, there is no doubt that in terms of publicity techniques, as distinct from art, the painter can on occasion make an impact not easily achieved by other means. A practical example of this was to be found in London this week in the exhibition of paintings by Terence Cuneo commissioned by the International Nickel Company.

This exhibition of some twenty pictures (illustrating some of the more dramatic operations at Sudbury as well as processes at Clydach, Acton and at Henry Wiggin's works) suggested two thoughts to us, which might repay further exploration by other mining companies seeking to bring home to shareholders the nature of the property in which they hold a stake. The first is that the painter is at a considerable initial advantage over the photographer in reproducing scenes underground or in the dimmer recesses of mills, tank houses or smelters. The second is the scope open to the painter for comment through emphasis, which by the nature of the subject is often denied to the camera.

Viewed as a publicity technique, which has got to justify itself cost-wise, expertise such as that of Mr. Cuneo can, perhaps, only be afforded in small doses. However, he certainly "has something," which more than one mining company is already utilizing and others undoubtedly could.

Coal is our Life, *by N. Dennis, F. Henriques and C. Slaughter. Published by Eyre and Spottiswoode (Publishers) Ltd. Pp. 255 with index. Price 25s. net.*

While the work under consideration is markedly different to the average book reviewed from time to time in these columns, it nevertheless is of outstanding interest to all who admit to apprehension as to the state of the British coal industry in this Year of Grace. The mining villages throughout this country form a world of their own, little understood by those outside it, and dominated by the need for an overwhelming proportion of the population to earn a living from the local pit. This particular situation colours the entire life of the British coal miner, and by inference it colours also the outlook of his dependents. For present conditions, personal attitudes and subsequent behaviour, must be examined not on face value alone but on recent history, and in the light of the isolation of mining communities, as well as in terms of fear and courage and plain "cussedness"—all of which have a place in the make-up of a man.

This work is the product of a team of three experts—two social anthropologists and a sociologist—who were enabled through the Nuffield Foundation to study the possible answers to two questions: namely, what has been the effect of nationalization on the daily life of coal miners?, and what are the present day conditions in the towns dominated by the coal mining industry? Two years of field work has produced an authoritative report, in a most readable and revealing book that may provide one glimmer of light through the portal of labour relations in the coal mining industry of the United Kingdom.

The Diamond Tool Industry in 1955. *Issued by Industrial Diamond Information Bureau. Pp. 12. Free of charge.*

As in previous years, the Industrial Diamond Information Bureau has compiled a survey of the diamond tool industry dealing with various scientific and technical aspects.

The subject matter of this pamphlet, mainly based on the Bibliography of Industrial Diamond Applications, is subdivided into 16 main groups and about 200 references are quoted. The literature can be made available to enquirers. *The Diamond Tool Industry in 1955* is available at the Bureau, 32/34 Holborn Viaduct, London, E.C.1.

MINING MISCELLANY

The Soviet Union has offered to extend credit to Indonesia over a five to six-year period to buy Soviet machinery and capital equipment and has also suggested that Indonesia and the Soviet Union should sign a trade and payments agreement

* * *

The Northern Ireland Ministry of Finance were recently given leave by Mr. Justice Curran in the Northern Ireland Chancery Court to grant a prospecting lease to Gotham Ltd., a subsidiary company of British Plaster Board Holdings Ltd.

* * *

The Moose Mountain iron mine at Sellwood, Canada, 40 miles north of Sudbury, is the subject of negotiations by the M. A. Hanna interests of Cleveland. If Hanna takes up the property, it would be restored to production in 1958.

* * *

The Turkish Finance Minister has announced that mineral exporters in that country are to receive special permits to import all types of mining equipment. This measure has been adopted in an effort to aid Turkey's mining industry. Under the new permit regulations exporters may import equipment to the value of 12 per cent of mineral exports to value £T1,000,000, 10 per cent in the case of £T3,000,000, and 6 per cent for exports valued at over £T3,000,000.

* * *

Dresser Industries, a U.S. firm of oil equipment makers, have acquired the production rights to a French turbo-drill believed to be similar in principle to the high-speed Russian Moder turbine oil drill, which is said to be able to drive through rock ten times faster than ordinary rotary drills. The pact gives the American firm the exclusive rights to make and sell the French turbo-drills in the U.S., Canada, Mexico and Venezuela. In March this year the U.S. company signed an agreement with the Soviet Union for the Moder, but the agreement was overruled on the grounds that the deal involved supplying the Russians with "strategic" U.S. information.

* * *

A company to be formed by Anglo-Transvaal Consolidated Investment Co. is to be granted sole prospecting and mining rights in an area some 150 miles east of Broken Hill, Northern Rhodesia. It is reported from Salisbury that agreement has been reached between Magundi Copper Mines and Minerals Ltd., Anglo-Transvaal and North Charterland Exploration Company. The ground covered by the grant is within the North Charterland concession area, about 4,000,000 acres in extent, and bounded on the west by the Luangwa river. High copper assays have been obtained from surface samples in one area of the North Charterland concession.

* * *

On January 26, the Gold Subsidy Board and the Philippine Gold Producers Association agreed to extend the agreement reached on September 16, 1955, so that the price for newly mined gold produced by the marginal companies would be raised once more from P103 to P109 per f.oz., thus restoring the 6 per cent differential provided for in the Gold Subsidy Act. The price payable for gold produced in over-marginal mines remained at P103. The agreement was extended until June 17, 1956, when the Gold Subsidy Act is due to expire. At the same time gold producers bound themselves to sell to the Central Bank not less than 50 per cent of their production until the agreement expired, retaining the option to sell the balance of their production either to the Central Bank or in the local bullion market according to which paid the higher price. Previously they had only been obliged to sell and the Central Bank to buy 30 per cent of their production. No information has yet reached us regarding the prices and selling arrangements which will be in force after the expiration of the subsidy on June 17.

* * *

A delegation of U.K. steel experts is to visit Russia at the end of this month. The delegation will be led by Dr. T. P. Colclough, C.B.E., technical adviser to the British Iron and Steel Federation. The invitation to visit Russia was extended by the Ministry of Ferrous Metallurgy. The delegation will visit plants in the Urals.

PERSONAL

Mr. Robert Annan has resigned as president and director of the Yukon Consolidated Gold Corporation. Mr. W. A. Arbuckle has been elected president. Messrs. A. M. Baer and M. F. Nicholson have been elected to the Board and Mr. C. O. Lindberg has resigned.

* * *

Baron Guy de Rothschild has been appointed a Director of The Rio Tinto Company, Limited.

A new mining body—the Base Minerals Association—has been formed in Johannesburg to further the interests of base minerals mining companies. Mr. J. W. Higgerty is chairman.

* * *

Mr. R. W. Diamond has accepted nomination as president of the sixth Commonwealth Mining and Metallurgical Congress to be held in Canada in 1957.

* * *

Mr. R. D. Peters will relinquish his directorships in the Selection Trust group on June 30.

* * *

Mr. I. M. Whyte has taken up his appointment as secretary to Camp Bird and its subsidiaries, Camp Bird Investment Trust and Camp Bird Industries.

* * *

Messrs. A. H. S. Lewis, J. Spencer, L. S. H. Jackson and B. Sadler have resigned as directors of the Alquife Ore Co. Ltd., and in their place Mr. Kenneth Henry Whitaker, Mr. Douglas Alfred Perrin Hill and Mr. Henry Arthur Cuming have been appointed Directors. The Secretaries, Messrs. Comben Longstaff and Co. Ltd. resigned and in their place Mr. Joseph William Markham was appointed Secretary of the Company. The Registered Office is now at 22 Old Broad Street, London, E.C.2.

* * *

The London Office of The Hunslet Engine Co. Ltd. is now at Locomotive House, 30/34 Buckingham Gate, Westminster, London, S.W.1. Telephones remain unchanged—Abbey 7127, 8, 9.

* * *

Films on Coal, a catalogue of films issued by the Public Relations (Film Section) of the National Coal Board, is now available.

CONTRACTS AND TENDERS

Burma

TEN/19844, copper sheet 4 ft. x 4 ft. x 1/64 in. or 28 B.G. 6 sheets; 4 ft. x 4 ft. x 12 SWG, 112 lb.; 4 ft. x 4 ft. x 16 SWG, 112 lb. Issuing authority Chief Controller, Union of Burma Purchase Board, St. John's Road, Rangoon. 111B/478/55-56 (H). Closing date 2/7/56. B.O.T. Ref.: ESB 15535/56. Telephone enquiries to Chancery 4411, Extension 738 or 771.

* * *

Germany

GEN/2825, the German Federal Trade Office for Industrial Trade has announced that the following goods may be purchased by recognized German importers from the U.K. and other countries. 7109/10 platinum and platinum alloys unwrought; 7109/21 semi-manufactures of platinum and platinum alloys; 7109/40 platinum waste, scrap, etc.; 7109/50 platinum metals (palladium, iridium, rhodium, ruthenium, osmium); 7109/90 waste from metals of the platinum group (palladium, rhodium, ruthenium, iridium, osmium) scrap, etc. D.M. value 1,050,000. Closing date 30/9/56 or quota exhausted. Telephone enquiries to B.O.T., Trafalgar 8855, Extenson 2171, quoting Ref.: CRE/654/56.

* * *

Uruguay

TEN/19819. Meal ingots, pig lead, copper, anti-friction metal, tin, zinc, aluminium, antimony, granulated nickel. Issuing authority The Administracion de Ferrocarriles del Estado. Specification C.M. 227/56. Closing date 30/7/56. B.O.T. Ref.: ESB/15161/56. Telephone enquiries to Chancery 4411, Extension 738 or 771.

* * *

South Africa

Stores Department, S.A. Railways. TEN/19870. 700 lb. hard drawn copper wire 150 lb. per mile to B.S.S. 174 current issue. 6,000 lb. hard drawn bare copper wire 200 lb. per mile to B.S.S. 174 current issue. Issuing authority Stores Department S.A.R. C.1152. Closing date 18/7/56. B.O.T. Ref.: ESB/15660/56. Telephone enquiries to Chancery 4411, Extension 738 or 771.

* * *

India

TEN/19884. Diesel powered mobile vertical rotary drill crawler mounted, diesel driven mobile auger drill, diesel driven mobile vertical rotary drill crawler mounted, diesel engine driven crawler tractor, bulldozer hydraulically controlled for mounting on tractor, diesel engine driven crawler tractor, all units with accessories. Issuing authority Director General of Supplies and Disposals, S.P.I.A./1367-9/IV. Closing date 4/7/57. B.O.T. Ref.: ESB 15856/56. Telephone enquiries for complete information to Chancery 4411, Extension 738 or 771.

METALS, MINERALS AND ALLOYS

COPPER.—The essentials of the American copper pricing situation remain unchanged. The big producers are still quoting 46 c. per lb., the custom smelters 40 c. No. 2 scrap copper is around 32½ c. However, moves have been made to solve the two problems that appear to stand in the way of a price adjustment.

Much the more important obstacle is the consent of the Chileans to a lower price and perhaps—if last week's reports are correct—some more flexible way of pricing the American mined Chilean output. It is reported from Santiago that Anaconda has begun negotiations on pricing and that Kennecott will, as usual, fall in with the pattern of any agreement reached. It is further stated that the 1956 electrolytic output is virtually sold; thus the question remaining is the price of a small quantity of as yet unsold fire-refined and a fairly large quantity of blister.

It will be interesting to see whether the firm sales are actually as large as is being claimed. During the brief period when Chile adopted the L.M.E. price basis she also adopted the "price ruling" formula. Furthermore, since the break in copper has been a clear probability for a long time it is unlikely that people have been queuing up to buy Chilean metal at 46 c. for delivery next December. Finally if all that is involved is the blister and a small quantity of fire-refined the negotiations should not have been so difficult.

The other problem—the wage negotiations in the copper mining industry have made progress in a rather puzzling way. The steel industry talks, which it was thought would provide a pattern for the copper talks, have made no progress at all. At the moment there is deadlock. But at the same time some wage talks have been successfully completed in the copper mining industry without waiting for results from the steel talks. Mine Mill made a contract with Phelps Dodge for a rise of 24 c. an hour spread over three years during which strikes are banned. Subsequently a comparable agreement was made with American Smelting and Refining, and Anaconda, and negotiations continue with Kennecott. There is, however, some inter-union rivalry to be noted. Mine Mill is expelled from C.I.O. for Communist domination (although its mining locals are largely free from Communists) and both the Steelworkers and the Auto workers are trying to organize the Mine Mill Union men. In an election at Ansonia, Mine Mill has won bargaining rights in a ballot with United Auto and United Steelworkers; it has also concluded at 24 c. three-year agreement at Ansonia which it hopes to extend to all American Brass plants. Clearly Mine Mill is settling for less than the Steelworkers so far and if the Steelworkers wish to drive Mine Mill out of business they must secure a better contract as an attraction.

Meanwhile a strike has broken out at Nkana where about 7,000 Africans have been out for three days and has since spread to a complete stoppage at Rhokana. It is claimed by the African Mineworkers' Union that the company is compelling certain categories of workers to join the monthly contract staff, although we would imagine that these transfers are no more than automatic consequences of upgrading under the advancement programme. Essential services are being maintained. The Chamber of Mines has stated that salaries of Africans of supervisory grades will be substantially increased from June 1 and that members of the African Staff Association will in future be paid monthly. In addition copper bonus paid to African employees (miners and staff) will be increased by approximately 40 per cent. As a result, the highest paid African staff employee will receive £30 a month basic salary.

The strike was not being taken very seriously in London where the price of copper continued to fall chiefly because of a further cut in the R.S.T. quotation from £320 to £300 and because of the wage settlements in the United States.

An offer has been received for the exploitation of the old copper mines at Boumahou, County Waterford, which is now being considered by the government of Eire. It has already been decided to grant facilities subject to certain conditions. It is understood that the offer came from St. Patrick's Mines, Ltd. a subsidiary of Mogul which is now exploiting Avoca at County Wicknow. Pumping operations have already begun at Allihies, County Cork, less than a week after it was announced that Can-Erin had become interested in the deposits. Clearing the old shafts will take several weeks.

LEAD.—There has been moderate activity in lead on the basis of 16 c. per lb. in New York. The feature of the week has been the realization of the extent of stockpiling of foreign lead by barter of agricultural produce. It is believed that about 20,000 tons of lead has been so bought in addition to a fairly high rate of stockpiling of domestic lead. This has put considerable heart into the market—it must also have put quite a few votes into the pockets of the Republicans. There is, however, a belief that actual consumption is slightly better than the current rate of offtake and this has helped sentiment.

TIN.—Tin has been a steady market in New York with most of the interest being provided by dealers. There are too many unsolved problems about for any decisive movement; the shaping of the I.T.A. in its early months, the size of Texas contracts for the next six months, the course of the American economy and the possibility of a strike in the steel industry.

One of these problems blew up in an unexpected way in the past week when Senator Morse spoke on the joint resolution to keep the smelter going till January 31, 1957. He then produced all the hackneyed arguments—that without the smelter America would be at the mercy of a international cartel, that Bolivia would collapse, and that American consuming industries would be forced to pay undue price increases. In a leader on the matter *The Wall St. Journal* virtually blames the Majority Leader Johnson and Speaker Rayburn for keeping the smelter in being. Thus it can no longer be taken for granted that the smelter will be sold next January. One is bound to wonder whether, if Morse had made this statement a few weeks ago, the Indonesians would have deposited their instrument of ratification in London.

However, the I.T.A. is about to come into being. It will be interesting nonetheless to watch the attitude of the Indonesians at the opening talks. It is now expected that Italy will join the I.T.A. now that a Parliamentary commission has recommended it.

ZINC.—Zinc in the United States has had a quiet week although—like lead—it has been much cheered by the knowledge that the American government has acquiredn about 30,000 tons of foreign metal for the stockpile by barter. The zinc industry is much concerned at the moment with the talks in the steel industry, for a breakdown in the negotiations might lead to a strike. Since demand for special high grade is weak and the industry is heavily dependent on buying for galvanizing, a strike of the steel workers at the present time would be most unfortunate. The industry in any case has wage talks of its own and Bunker Hill has apparently offered to pay wage increases similar to those agreed in the copper mining industry. This is quite a handsome offer when the differing rates of prosperity in the two industries are noted.

ALUMINIUM.—Currently the aluminium picture is, as usual, one of ever expanding output but, by way of a change, of a somewhat easier market position. On the production side of the picture, it is now thought that barring unforeseen stoppages the U.S. aluminium industry will this year produce at least 1,750,000 s.tons of primary—that is to say achieve a 12 per cent increase over last year. Present expectations are that this year's round of wage increases will be negotiated peacefully while for the moment the power supply position looks promising for the autumn.

Canadian primary capacity has been stepped up this month by the addition of 52,000 s.tons of capacity, representing additional potlines at Alcan's Isle Maligne smelter in Quebec totalling 22,000 tons, and an additional 30,000 tons at Kitimat where a further 30,000 tons is scheduled for the end of this year.

In northern Norway the Elektrokemisk A/S is financing the erection of a new aluminium plant at Mosjoen with an initial output of 20,000 s.tons of primary by 1958 and an eventual annual output of 60,000 s.tons. Other prospective capacity increases now under way in Norway total some 56,000 s.tons annual capacity.

From Japan comes news of plans to double primary aluminium capacity by 1961 to a rated output of 121,300 tonnes.

On both sides of the Atlantic the market position looks easier. So far as the States is concerned, aside from increasing domestic production, imports are expected to be up on the year by at least 65,000 tons, while the market is assured of the stockpile making no demand on primary producers this year. In the U.K., the market has also eased appreciably in recent weeks, a situation to which increased Canadian supplies has contributed, quite apart from the general easing of consumer pressure on most metals.

CHROME.—The Turkish Statistical Office reports that a number of private owners of chrome mines have considerably reduced their output during the past year. Production in the State-owned mines has also fallen sharply, output in February last amounting only to 6,000 tons against 24,000 tons in February, 1955. The mines continue to suffer from transport difficulties resulting from a shortage of fuel and of tyres and are also affected by the scarcity of explosives which has hampered operations for a considerable period. Turkish chrome exporters report, however, that they have lately been receiving larger orders both from Europe and the U.S. It is understood that in the last two weeks of May a total of 50,000 tons of chrome ore was shipped to the U.S.

The U.S. Bureau of Mines reports a sharp increase in domestic chromite consumption during the first quarter of this year at 191,771 s.tons of Cr_2O_3, an increase of 37 per cent over the corresponding period of 1955. Of this tonnage 111,445 s.tons were of metallurgical grade representing an increase over the corresponding period of about 50 per cent.

THORIUM.—Consolidated Edison Co., of New York, Inc., has purchased 13¼ s.tons of thorium from the Atomic Energy Commission for $537,000 and has applied to lease a sufficient amount of uranium-235 to enable work to proceed on a $55,000,000 atomic power plant, designed to produce about 40,000 kW of electricity, which is expected to be in operation by 1960. Only 1/140th part of uranium-235 is contained in natural uranium U-238. Thorium can be converted into fissionable U-233 by bombardment with neutrons from U-235. This will be the first atomic power plant in the U.S. to use thorium as the basic fuel. The atomic generator is being built by Babcock and Wilcox, who are conducting experiments with a full-sized reactor at their nuclear facilities plant in Lynchburg, Va. The tests will determine whether Consolidated Edison is leasing enough uranium to set up a chain reaction, the pattern of fuel element arrangements, the best methods to get the heat from the reactor core, and the design of control rods.

N.R.C. Metals Corporation, a wholly owned subsidiary of National Research Corporation, which recently signed a contract with the Atomic Energy Commission for the supply of 350 s.tons of zirconium metal annually for a five-year period, is searching for new and more economical methods for the production of thorium.

TUNGSTEN.—The Senate Interior Committee has approved a Bill authorizing the U.S. Government to continue purchasing domestic tungsten, but at a lower price than that now paid to producers. It calls for G.S.A. to buy 1,250,000 units of tungsten during the next 2½ years, or 12,500 s.tons in all. Domestic tungsten output amounted last year to about 1,000,000 units. The purchase price would be $55 per unit but small producers with an output of less than 1,000 units a year would receive $63 per unit. G.S.A. would also be required to purchase up to 250,000 tons of acid grade fluorspar for $53 per ton, 4,000 tons of asbestos at about $1,700 per ton, and up to 125 s.tons of columbium-tantalum at $4.70 per lb. G.S.A. would stockpile the minerals and sell them on the market when demand so warranted.

The Spanish Directorate of Mines and Fuel is reported to have authorized the erection of a processing plant near Madrid with a capacity of 600 kilos per month of metallic tungsten and tungsten products. It is thought that the plant may be operating in two years.

The London Metal Market

(From Our Metal Exchange Correspondent)

Once again copper has occupied the headlines with three major developments, two bearish and one bullish. Over the weekend the R.S.T. reduced its basis copper price to £300 per ton, but by Tuesday the L.M.E. settlement price was again below this figure. It can now be seen that this attempt at stabilizing prices has meant that on a rising market (and therefore at a time when it was relatively easy to sell semis) R.S.T. buyers had a distinct advantage, but that on a falling market these same buyers not only had to complete for the sale of their products on a market naturally unwilling to buy more than necessary but also had to pay more for their raw material: it is hoped that now the copper price is approaching more reasonable levels the R.S.T. will reconsider its policy.

On Tuesday news was received that the Phelps Dodge Corporation had signed a three-year agreement with the Miners' Union, and it was generally felt that this was an indication that a copper strike next month in America was probably averted: this feeling was strengthened on Wednesday when it became known that Anaconda had also reached agreement with the Union and that negotiations with the other companies were proceeding satisfactorily.

The bullish factor has been the stoppages at Rhokana and Nkana, but at this distance it looks as if these are merely teething troubles which were to be expected during the process of handing over certain jobs to Africans. New business is very spasmodic, and the combination of the approaching holiday season with the general feeling that a further fall in price is imminent is causing buyers to exercise extreme caution.

Tin has been featureless with demand running at a reasonable level, and with the life of the Texas smelter now definitely extended until the end of this year it is amusing to note that there are already murmurings of possibilities of a further extension. On the market itself the backwardation has increased, largely owing to technical considerations, and this state of affairs is expected to last for a few more weeks. On Thursday morning the Eastern price was equivalent to £756¼ per ton c.i.f. Europe.

The lead and zinc markets have both drifted in sympathy with that of copper following the completion of the first round of barter transactions. It is, however, expected that more of these transactions will take place in the near future, and it is therefore felt that any major recession is unlikely and that in any case the backwardation will increase, and this in itself will tend to lessen the fall.

Closing prices and turnovers are given in the following table:

	June 14		June 21	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Copper				
Cash	£301	£301¼	£293¾	£294
Three months	£302	£302¼	£295	£296
Settlement	£301¼		£294	
Week's turnover	7,100 tons		6,125 tons	
Tin				
Cash	£745	£746	£755	£756
Three months	£741	£742	£745	£746
Settlement	£746		£756	
Week's turnover	805 tons		560 tons	
Lead				
Current half month	£116¼	£116½	£113¾	£114
Three months	£113¼	£113¾	£112	£112¼
Week's turnover	4,725 tons		3,125 tons	
Zinc				
Current half month	£96	£96¼	£94	£94¼
Three months	£94¼	£94½	£92¾	£93
Week's turnover	7,800 tons		3,925 tons	

OTHER LONDON PRICES — JUNE 21

METALS

Aluminium, 99.5%, £189 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £210 per ton
Crude (70%) £200 per ton
Ore (60%) bases 23s. 6d./24s. 6d. nom. per unit, c.i.f.
Bismuth (min. 1 ton lots) 16s. lb. nom.
Cadmium 12s. 0d. lb.
Chromium, 6s. 11d. lb.
Cobalt, 21s. lb.
Gold, 249s. 7d.
Iridium, £29/31 oz.
Manganese Metal (96%-98%) £269 according to quantity
Magnesium, 2s. 4d. lb.
Nickel, 99.5% (home trade) £519 per ton
Osmium, £24/27 oz. nom.
Osmiridium, nom.
Palladium, £8 0s./£8 10s. oz.
Platinum U.K. and Empire Refined £34/£35 oz. Imported £37 0s./£38 0s. oz.
Rhodium, £42.
Ruthenium, £15/£17 oz.
Quicksilver, £86 10s. ex-warehouse
Selenium, 112s. nom. per lb.
Silver, 78⅛d. f.oz. spot and 78⅛ f'd.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 50% 7s. 3d. c.i.f.
40% 6s. 3d. lb. c.i.f.

Chrome Ore—
Rhodesian Metallurgical (semi-friable) 48% £15 15s. 0d. per ton c.i.f.
,, Refractory 45% .. £14 15s. 0d. per ton c.i.f.
,, Smalls 42% .. £12 15s. 0d. per ton c.i.f.
Magnesite, ground calcined .. £28 0s./£30 0s. d/d
Magnesite, Raw (ground) .. £21 0s./£22 0s. d/d
Molybdenite (85% basis) .. 8s. 2½d. nom. per lb. c.i.f.
Wolfram and Scheelite (65%) .. 261s.0d./266s. 0d. c.i.f.
Tungsten Metal Powder (98% Min. W.) .. 21s. 0d. nom. per lb. (home)
Ferro-tungsten (80%-85%) .. 18s. 0d. nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £39 3s. 9d. d/d per ton
Ferro-manganese, home .. £66 per ton
Manganese Ore Indian
Europe (46%-48%) basis 125s. freight .. .. 103d./105d. per unit c.i.f.
Manganese Ore(43%-45%) .. 97d./98d. per unit c.i.f.
Manganese Ore (38%/40%) .. 90d./92d. per unit
Brass Wire .. .. .. 3s. 0½d. per lb. basis
Brass Tubes, solid drawn .. 2s. 4½d. per lb. basis

GROWING CONFIDENCE IN F.S. GEDULD

Our Johannesburg market correspondent has selected Free State Geduld as a particularly good example of an attractive gold mining share which—despite generally dull market conditions—has shown considerable strength over the past few weeks. The price of this share is now around 89s. and there is a large section of opinion in both this country and South Africa which believes that past confidence placed in the mine will soon be justified by results obtained from current development work. If all goes well, the shares at their present level provide an exceptional chance of substantial capital appreciation.

While underground development at the intriguing No. 2 shaft section must continue for some time before the exceptionally enriched area has been opened up, there is reason to believe that work so far in this part of the mine has disclosed good values.

Recently encouragement has been engendered in F.S. Geduld by the gradual advance in milling grade to 7.4 dwt. per ton. Towards the end of last year, the bears were suggesting that a recovery grade of 5½ dwt. per ton was the best that could be expected from the No. 1 shaft area. But the main reason for firmness in the shares has been knowledgeable buying based on the conviction that development to the south of the water zone—near the No. 2 shaft — is now showing considerably better values than the 1,600 in. dwt. from 300 ft. sampled in the March quarter. Moreover, it has been quietly suggested that the average of all development during April was comparable to that shown in some of the best of the quarterly reports from President Brand. Needless to say development in May and June could have a considerable effect on values due to be revealed in the June quarterly. Indeed, the behaviour of F.S.G. shares in recent weeks certainly suggests considerable underlying confidence.

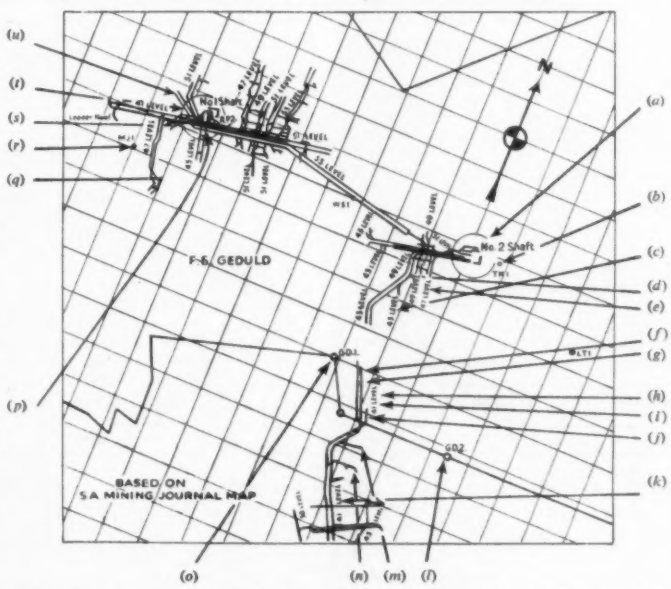
More confidently (although it is appreciated that the rate of advance in 43 haulage south from No. 2 shaft may now be rather slower as ventilation will have been adversely affected by the great distance from the shaft) may reasonably be expected that a connection with 41 Haulage north from Western Holdings will be made before the end of the quarter. Work which is already in progress to establish raises on reef for eventual stoping operations will then be speeded up considerably. It is considered by no means improbable that stopes to the south of the water zone will be contributing tonnage to the mill during the third quarter of this year, and certainly in the last quarter. Incidentally, the company's last annual report forecast that stoping near the No. 2 shaft would start in May. High grade ore from the south of the No. 2 shaft should mean a really substantial increase in profits by the end of this year.

RAPID OPENING-UP OF "ENRICHED AREA"

Reference to the underground plan of Western Holdings shows that stopes in the northern part of the property approaching the Free State Geduld boundary are being established simply by raises on reef at intervals of 500 and 600 ft. In more broken and lower grade areas of this mine (as at Free State Geduld, in the vicinity of the No. 1 shaft) the raises are only 250 to 300 ft. apart and for the most part ore available for stoping has been tested by reef development on at least three sides of each block. It follows that 1 ft. of development in the rich northern section of Western Holdings has been doing the work of 2 to 3 feet of development in other parts of the mine. For this reason it is confidently expected that opening up of the southern section of Free State Geduld will be very rapid and that the build-up in tonnage will exceed expectations based on normal mining procedure. It should, of course, be mentioned that the normal tendency during initial production stages is to put raises at fairly close intervals in order to establish adequate stope faces as rapidly as possible. But in the case of Free State Geduld, this is not quite so necessary at the present time because of the considerable tonnages already developed near the Nos. 1 and 2 shafts.

FREE STATE GEDULD MINE PLAN

(Showing values obtained from boreholes and development.)



Whole Mine : By the end of March 1956 a total of 185,505 ft. of development had been accomplished.
Sampled : 14,975 ft. averaging 122.71 dwt. over 5.90 inches equivalent to 724 inch dwts.
Payable : 13,875 ft. equal to 92.7% of the footage sampled, averaging 129.65 dwts. over 5.97 inches equivalent to 774 inch dwts.

No. 1 Shaft : Driven 116,200 ft.
Sampled : 11,030 ft. — 94.02 dwts. over 5.85 inches equivalent to 550 inch dwts.
Payable : 9,970 ft. — 90.4% — 100.67 dwts. over 5.95 inches = 599 inch dwts.

No. 2 Shaft : Driven 68,887 ft.
Sampled : 3,945 ft. — 200.66 dwts. over 6.03 inches = 1,210 inch dwts.
Payable : 3,905 ft. — 99.0% — 203.33 dwts. over 6.01 inches = 1,222 inch dwts.

LEGEND

(a) Shaft intersection 635 in.-dwt.
(b) 227 in.-dwt.
(c) 45 level : 1,672 in.-dwt.
(d) 43 level cross-cut : 1,617 in.-dwt.
(e) 47 level cross-cut : 1,881 in.-dwt.
(f) 1,821 in.-dwt.
(g) 1,864 in.-dwt.
(h) 1,773 in.-dwt.
(i) 1,665 in.-dwt.
(j) 2,134 in.-dwt.
} average : 1,869 in.-dwt.
(k) Cross-cut : 2,025 in.-dwt.
(l) 12,528 in.-dwt.
(m) 1,562 in.-dwt.
(n) Cross-cut : 7,518 in.-dwt.
box hole : 1,091 in.-dwt.
(o) 23,037 in.-dwt.
(p) 1,085 in.-dwt.
(q) Underground borehole 6,461 in.-dwt.
(r) 1,747 in.-dwt.
(s) Cross-cut : 1,081 in.-dwt.
(t) Shaft intersection : 189 in.-dwt.
(u) Main mill tonnage comes from this area : average 536 in.-dwt.

NO. 1 SHAFT AREA IS RICH ALSO

It is only natural that interest should be focused on the area to the south of the No. 2 shaft, but it should not be overlooked that there could be very interesting developments to the south of No. 1 shaft in the near future. In his statement to shareholders dated December 15, 1955, the chairman said: "At No. 1 shaft most of the reef development done so far has been in the area to the north-east of the shaft. It will be recalled that early in 1955 an underground borehole from 47 Level, at a point 2,000 ft. south of the shaft, gave a value of 6,461 in. dwt.; and that surface borehole Mijannie No. 1 situated some 2,000 ft. south-west of the shaft, gave a value of 1,747 in. dwt. We intend to start opening up this area more rapidly during 1956 and with this end in view a haulage on 49 Level is being driven to intersect the reef in the vicinity of the underground borehole referred to above."

An inspection of the company's plan of workings suggests every prospect that 49 haulage will be in the vicinity of the 6,000 in. dwt. result towards the end of the current quarter or early in the second half of the year. It is not impossible that values in this region might rival those in the more publicized "jack-pot" area.

As we go to press a better feeling has become evident in the Kaffir market as a whole, resulting in useful gains being established throughout the list. As leader of the O.F.S. section, F.S. Geduld has participated in this movement rising to a shade over 89s. which represents the highest point reached since September last year.

COMPANY NEWS AND VIEWS

Gold Shares Stage Recovery in Otherwise Dull Markets

After the technical rally on Wall Street which raised the *Dow Jones Industrial Index* to nearly 486, U.S. prices have not maintained their upward movement but elapsed into a phase of uncertain dullness. While many observers have ascribed this event to doubts regarding the possibility of President Eisenhower running for a second-term candidacy, the chances of a steel strike in the US. have also affected sentiment. -Starting at 485.52 on June 14, the *Dow Jones Industrial Index* had declined to 485.0 by June 20. Movements between these two points were narrow.

In London conditions were very similar. After a moderate improvement on the better trade figures for May, paucity of business and doubts regarding opportunities for profitable investment in the short-term kept buyers away. On June 14, *The Financial Times Industrial Ordinary Index* stood at 180.4 but by June 20 it had fallen away to 176.9.

Outstanding against this somewhat depressing background, were Kaffirs which started a sizeable recovery on June 13. Indeed, on Thursday morning gains were maintained and some further rises took place. While this encouraging upward movement was regarded as being the outcome of recent favourable assessments of the investment merits of gold shares generally, and finance issues in particular, the better feeling owed some of its success to Mr. Macmillan's concession regarding a retrospective alleviation of tax for mining companies registered in the U.K. but operating overseas. His assurance that the question of establishing a category of companies to be known as Overseas Trading Corporations in next year's budget would be considered was received particularly well.

Reflecting improved sentiment Anglo American jumped to £7 11s. 3d. This movement was, of course, also partly due to rises which took place in individual shareholdings of the Corporation. Elsewhere, African and European moved up from 52s. 6d. to 56s. 6d. on investment demands, while General Mining put on 4s. 6d. to 77s. In the O.F.S. group F.S. Geduld touched 89s. 4d.—its highest level since last September. Ofsits gained 5s. on the week to 59s. 6d. while President Brand were 2s. 6d. better at 57s. President Steyn rose to 30s. 9d. and investment demand for St. Helena hardened these shares to 26s. 6d. After receding to 18s. 6d. on Tuesday morning, owing to forced liquidation Welkom rallied to 20s. 9d. At 5s. 10½d., however, Loraine barely reflected its entry into the uranium field. Freddies were active at 7s. 3d. on the hope that some news regarding operations on the Far Western Rand might be disclosed at the meeting next week. Amongst the older producers, substantial rises were recorded and all recent dividend payments more than recovered. The Far Western Rand group were outstandingly firm.

Although at the present time it is difficult to find a satisfactory explanation for this sudden interest in gold shares, it is thought that recent contractions in sales have indicated that much of the pessimism surrounding gold issues has now been eliminated. Sellers are reluctant to part with stock and a measure of switching from industrials has been reported. A further reason is hope regarding the impending June production figures together with the fact that the quarterlies are now not far off.

Jo'burg Gold Share Markets in Technically Sound Position

Some idea of current hopes surrounding the future course of gold share markets may be obtained from the following notes sent to us by our Johannesburg stock market correspondent. Emphasizing in particular the investment attractions of finance and holding issues, he has selected the Anglo American Corporation of South Africa as being a stock of exceptional merit in this field. While it is easy to agree that the income of this progressive and rapidly expanding organization must undoubtedly have substantial growth prospects, in the short term, from a purely capital standpoint, further bear

LONDON STOCK EXCHANGE PRICES — JUNE 14 - JUNE 20, 1956

Finance	Price June 20	+ or — on week
African & European	2 1/2	+ 1/8
Anglo American Corpn.	7 5/8	+ 1/16
Anglo-French	18/9	.....
Anglo Transvaal Consol.	1 1/4 XD	— 1/8
Central Mining (£1 shrs.)	47/9	+ 4/-
Consolidated Goldfields	54/9 XD	— 6d
Consol Mines Selection	1 5/8	+ 1/8
East Rand Consols	2/-	+ 3d
General Mining	3 1/2	+ 1/8
H.E. Prop.	7/4 1/2	+ 1 1/2 d
Johnnies	37/-	+ 2/-
Rand Mines	3 1/16 XD	.....
Rand Selection	1 1/8	+ 1/8
Union Corporation	38/3	+ 1/9
Vereeniging Estates	4 1/2 XD	.....
Writs	35/- XD	+ 3/9
West Wits.	34/9	+ 6d
Rand Gold		
Blyvoor	22/1 1/2 XD	— 6d
Brakpan	6/- XD	— 3d
Buffelsfontein	25/1 1/2	+ 9d
City Deep	10/6	.....
Consol. Main Reef	16/10 1/2 XD	— 7 1/2 d
Crown	1 15/16 XD	— 1/16
Daggas	2 1/2 XD	.....
Dominion Reefs	18/9 XD	+ 1/3
Doornfontein	20/9	— 3d
Durban Deep	25/- XD	.....
E. Champs	2/9	— 3d
E. Daggas	8/6 XD	— 10 1/2 d
E. Geduld (4s. units)	29/6 XD	— 1/-
E. Rand Props.	47/- XD	— 2/3
Geduld	4 XD	— 1/4
Govt. Areas	3/7 1/4 XD	— 4 1/2 d
Grootvlei	19/7 1/4 XD	— 9d
Hartebeestfontein	38/9 XD	+ 1/4 1/2
Libanon	6/9 XD	— 6d
Luipaards Vlei	13/- XD	— 3d
Marievale	19/10 1/2 XD	— 6d
New Kleinfontein	4/1 1/2	.....
New Pioneer	14/-	+ 7 1/2 d
Randfontein	39/6 XD	— 6d
Robinson Deep	7/9 XD	+ 3d
Rose Deep	10/6	+ 3d
Simmer & Jack	3/7 1/2 XD	— 3d
S.A. Lands	20/7 1/2 XD	— 1/10 1/2
Springs	2/7 1/2 XD	+ 1 1/2 d
Stilfontein	23/9 XD	— 3d
Sub Nigel	28/1 1/4 XD	— 1/10 1/2
Vaal Reefs	31/-	+ 1/9
Van Dyk	2/-	.....
Venterspost	12/3 XD	— 1 1/2 d
Vlakfontein	17/1 1/2 XD	— 6d
Vogelstruisbult	16/6 XD	— 6d
West Driefontein	5 1/16 XD	— 1/8

Rand Gold contd.	Price June 20	+ or — on week
W. Rand Consolidated	1 13/16 XD	+ 1/16
Western Reefs	1 1/2 XD	+ 1/32
O.F.S. Gold		
Freddies	7/3	+ 3d
Freddies Consolidated	4/4 1/2	+ 1 1/2 d
F.S. Geduld	4 1/2	+ 1/4
Geofries	8/9	+ 9d
Harmony	24/3	+ 1/-
Loraine	5/9	+ 3d
Lydenburg Estates	17/6	+ 2/-
Merriespruit	8/6	— 3d
Middle Wits.	12/6	+ 9d
Ofsits	58/3	+ 3/9
President Brand	56/6	+ 2/6
President Steyn	30/9	+ 1/6
St. Helena	26/3	+ 10 1/2 d
Virginia Ord.	10/9	+ 3d
Welkom	20/4 1/2	+ 10 1/2 d
Western Holdings	3 3/32	+ 1/32
West African Gold		
Amalgamated Banket	1/6	.....
Ariston	4/4 1/2	+ 3d
Ashanti	16/-	+ 1 1/2 d
Bibiani	2/1 1/2	.....
Bremang	1/3	— 1 1/2 d
G.C. Main Reef	1/7 1/2	— 1 1/2 d
Konongo	1/9	.....
Marlu	2d	.....
Taquah	1/7 1/2	.....
Western Selection	7/10 1/2	+ 3d
Australian Gold		
Gold Mines of Kalgoorlie	12/9	.....
Great Boulder Prop.	11/9	+ 9d
Lake View & Star	16/3	+ 6d
Mount Morgan	21/-	+ 3d
North Kalgurli	7/9	.....
Sons of Gwalia	3/-	+ 1 1/2 d
Western Mining	9/10 1/2	+ 4 1/2 d
Miscellaneous Gold		
Cam & Motor	8/- XD	— 4 1/2 d
Champion Reef	6/3	+ 3d
Falcon Mines	7/9	+ 3d
Globe & Phoenix	27/3 XD	.....
Motapa	1/-	.....
Mysore	3/3	+ 1 1/2 d
Nundydroog	9/7 1/2	+ 1 1/2 d
St. John d'el Rey	21/6	+ 1/6
Zams	2 1/16	.....

Diamonds and Platinum	Price June 20	+ or — on week
Anglo American Inv.	8 1/2 XD	— 1/16
Casts	23/4 1/2	+ 1/-
Cons. of S.W.A Pref.	10/7 1/2 XD	— 3d
De Beers Defd. Reg.	4 1/8	— 1/8
De Beers Pfd. Reg.	13 1/2 XD	— 1/2
Pots Platinum	12/3	+ 6d
Waterval	20/3	+ 1/3
Copper		
Bancroft	41/3	.....
Chartered	65/9	— 9d
Esperanza	3/4 1/2	+ 4 1/2 d
Messina	8 1/4	— 1/2
Nchanga	13 1/4	+ 1/4
Rhod-Anglo-American	5	— 1/8
Rhod. Katanga	25/-	— 1/-
Rhodesian Selection	45/9	— 1/6
Rhokana	37	— 1/4
Rio Tinto Reg.	2 1/16	— 1/16
Roan Antelope	25/3	— 3d
Selection Trust	4 1/16 XD	— 1/16
Tanks	7 1/4	+ 1/8
Tharsis Sulphur Br.	4 1/4	.....
Tin (Eastern)		
Ayer Hitam	20/9 XD	— 6d
Gopeng	9/4 1/2 XD	+ 3d
Hongkong	5/7 1/2	.....
Ipoh	23/6	.....
Kamunting	7/10 1/2	— 1 1/2 d
Kepong Dredging	2/9	— 3d
Kinta Tin Mines	15/9	+ 1/6
Malayan Dredging	8/10 1/2 XD	— 3d
Pahang	11/6	+ 7 1/2 d
Pengkalen	12/6	+ 9d
Petaling	7/10 1/2	.....
Rambutan	24/6	.....
Siamese Tin	10/9	+ 10 1/2 d
Southern Kinta	15/3	+ 6d
S. Malayan	7/6 XD	— 1 1/2 d
S. Tronoh	5/9 XD	— 3d
Sungei Kinta	14/6	.....
Tekka Taiping	9/7 1/2	+ 9d
Tronoh	9/3 XD	+ 3d
Tin (Nigerian and Miscellaneous)		
Amalgamated Tin	10/9	+ 4 1/2 d
Berah Tin	46/-	+ 3/3
Bisichi	4/6	+ 1 1/2 d
British Tin Inv.	21/9	+ 9d
Ex-Lands Nigeria	2/4 1/2	+ 1 1/2 d
Geevor Tin	14/6	+ 9d

Tin (Nigerian and Miscellaneous) contd.	Price June 20	+ or — on week
Gold & Base Metal	1/6	.....
Jantar Nigeria	4/10 1/2	+ 1 1/2 d
Jos Tin Area	12/3	.....
Kaduna Prospectors	1/6	.....
Kaduna Syndicate	2/1 1/2	.....
London Tin	9/1 1/2	+ 3d
United Tin	10 1/2 d	— 1 1/2 d
Silver, Lead, Zinc		
Broken Hill South	55/-	.....
Burma Mines	6/3	— 1 1/2 d
Consol. Zinc	49/6	+ 9d
Lake George	13/9	+ 6d
Mount Isa	19/1 1/2	+ 4 1/2 d
New Broken Hill	40/-	+ 1/-
North Broken Hill	4 1/2	+ 1/4
Rhodesian Broken Hill	10/6	+ 6d
San Francisco Mines	23/9	+ 6d
Uruwira	4/9	.....
Miscellaneous Base Metals and Coal		
Amal. Collieries of S.A.	45/-	— 2/-
Associated Manganese	36/7 1/2 XD	— 4 1/2 d
Cape Asbestos	9/1 1/2	— 3d
C.P. Manganese	27/9	— 3d
Consol. Murchison	2 1/16	— 1/4
Natal Navigation	3 1/2	— 1/16
Turner & Newall	100/7 1/2 XD	— 1/4 1/2
Wankie	17/6	.....
Witbank Colliery	4 1/8	.....
Canadian Mines		
Dome	$27	+ 1 1/2
Hollinger	$48 1/2	— 1/2
Hudson Bay Mining	$153	+ 5
International Nickel	$169	— 1 1/2
Mining Corpn. of Canada	£9	+ 1/2
Noranda	$106	.....
Quemont	£9 7/8	+ 1/8
Yukon	4/6	.....
Oil		
Apex	38/6 XD	+ 2/-
Attock	39/6	.....
Br. Petroleum	156/9	+ 7/3
Burmah	95/7 1/2	+ 1/1 1/2
Canadian Eagle	58/9	.....
Mexican Eagle	20/6	.....
Shell	8 1/2	— 1/16
Trinidad Oil	75/-	+ 4/-
T.P.D.	43/9	+ 3d
Ultramar	40/3	— 3d

attacks on both copper and diamond shares could be somewhat dangerous to the investor. We have, of course, stressed this point several times during past months and the view that present prices now fully discount current fears regarding the future course of the U.S. economy might well be justified. Whether or not this assessment will prove to have been the correct one remains one of the most intriguing uncertainties of the moment.

Our Johannesburg Market Correspondent writes:—

The past six months has been one of the quietest periods ever experienced on the Johannesburg Stock Exchange. Nevertheless, it is re-assuring that prices of better gold stocks are standing above low points reached during the sell-out in January—even if they are fairly well below peaks established in February's brief boomlet.

Few Sellers at Current Prices

Indeed there are very few willing sellers about at current prices. And in view of the favourable progress reports from the newer mines, together with a better showing by established producers in the first half of the year this is understandable. At one stage during May it looked as if the market was going to be turned by a modest increase in London and Continental enquiries. But this unfortunately coincided with small forced local selling due to banks cutting down certain overdraft limits. Since then, a dribble of selling—which must always be expected—has matched limited enquiry and resulted in a virtual stalemate.

Technically the market is in a very favourable position to respond to a small improvement in buying or favourable developments either in the mining or economic spheres. It is noticeable that the Kaffir market is being tipped as likely to take a turn for the better in the near future both in the London financial press and stockbrokers' circulars. Emphasis at this stage is being placed on the safety of financial and holding companies and the great promise of a number of the newer mines.

Investment Attractions of Anglo American

Amongst financial issues, there are several which are most attractive whatever the outcome of recent economic developments in the United States and Britain. Outstanding in this class is The Anglo American Corporation of South Africa, the shares of which have come back some £2 in price in recent months and now offer a yield of approximately 5 per cent at 151s. This set-back in price has been principally due to falls in copper and diamonds.

Dealing firstly with the Corporation's investments in copper, it should be noted that the financial year-ends of Rhokana and Nchanga mines, (which directly and indirectly are the most important of the copper investments at the present time), are respectively at June 30 and March 31. Both these companies declare substantially higher final than interim dividends. This means that revenue of the Anglo American Corporation derived from copper during the year ended December 31, 1955, did not include inflated copper dividends resulting from very high metal prices received. But the benefit of these inflated dividends will accrue in the current year. This in turn should at least go some way towards offsetting the non-recurring scrip dividend received from Anglo American Investment Trust during 1955. Thus, profits, after taxation and preference dividend, at approximately £4,900,000 in 1955, need not be regarded as abnormal. Additionally share dealing brought in no more than £220,000.

Bancroft will soon Contribute Revenue

It should also be borne in mind that the Bancroft mine—in which the Corporation is very substantially interested—will start production next year and should be turning out more than 80,000 tons of copper per annum from 1960. In the next year or two this investment will thus start to contribute revenue and might be of considerable assistance in offsetting any setback in dividend income from Rhokana and Nchanga. It is perhaps of interest to reflect that the Corporation's net profit in 1954 after taxation and preference dividend was £3,900,000 and that during this period revenue received from copper investments was based on a metal price of £280 and under. Dividends on the equity cost £2,742,000 and were therefore very well covered by both the 1954 and 1955 profits.

Apart from the scrip dividend from Anglo American Investment Trust referred to above, income from diamond investments has also not been inflated. The De Beers' dividend for 1955 (and the bulk of Anglo American Investment Trust's revenue is from De Beers) was more than twice covered by the consolidated net revenue after provision for taxation and preference dividend, and at 10s. for the year, was at the same rate as for the previous five years. On top of this, we have Sir Ernest Oppenheimer's recent statement that demand for gem stones still exceeds supply. At this stage diamond investments certainly give no cause for concern.

Rising O.F.S. Dividends

Thirdly, the Corporation's very substantial investment in the Orange Free State, Klerksdorp and West Witwatersrand gold fields, collectively contributed very little to income in 1955. A steady and material improvement in revenue from these investments is expected from now on. Besides this, although of a comparatively minor nature, revenue from coal must also improve following recent Natal and Transvaal price increases by 1s. 8d. per ton.

Indeed, there can be no doubt that 1956 will again show excellent profits while from 1957 onwards, increasing revenue from the investments in new gold mines should more than offset any likely setback in revenue from the copper and diamonds. It need scarcely be added that any serious recession in the U.S. would greatly enhance the value of gold investments.

Period of Consolidation Ahead?

Finally, it is most important to bear in mind the many millions of pounds which have been spent over the past 10 years in developing new gold and copper mines and in extending and modernizing plant. Although investigation and prospecting for new ventures is still being pushed ahead vigorously, it may be expected that the decade of expansion (which has seen the Corporation's capital funds and reserves rise from £11,000,000 to £32,000,000, and the market value of its investments from £28,000,000 to £69,000,000), will be followed by a period of consolidation. Should this be the case the necessity of conserving substantial proportions of profits would no longer be so pressing.

Rand Dividend Season Closes

With the recent publication of dividends by Central Mining and Anglo Transvaal, the June Rand dividend season has closed.

Company	*Dec. 1954* s. d.	*June 1955* s. d.	*Dec. 1955* s. d.	*June 1956* s. d.
Central Mining				
Blyvoor*	1 2	1 1	1 0	**1 0**
City Deep	6	Nil	Nil	**Nil**
Cons. Main Reef* ..	2 0	2 6	2 6	**2 0**
Crown	3 6	3 6	3 6	**3 0**
Durban Deep ...	1 6	1 3	1 3	**1 3**
E. Rand Prop. ...	1 9	1 9	2 0	**2 0**
Modder East* ...	1 6	1 6	1 3	**1 0**
Rand Mines	3 0	2 9	3 0	**2 9**
Transvaal Gold ...	6	6	3	**5**
Anglo Transvaal				
Rand Leases* ...	6	6	6	**3**
Village M.R.* ...	1½	1½	1½	**1½**
Hartebeestfontein† ...	—	—	—	**1 0**

* Companies ending their financial year in June. † Maiden distribution.

It has been stated by Transvaal Gold that a net loss on mining operations must be expected during the current half-year. The latest dividend represented a payment received earlier in the year from S.A. Forest Investments. Consideration was being given to initiating action to close down the property and distributing S.A. Forest Investments to shareholders at an early date.

The outstanding feature of Anglo Vaal's dividend announcements was that of 1s. per 10s. share from Hartebeestfontein. Production at this property did not start until July last year and the dividend was therefore regarded as being most satisfactory.

Selection Trust Expects Larger Gross Revenue for 1956-57

Discussing the future outlook in his statement to shareholders of Selection Trust, Mr. A. Chester Beatty, the chairman, said that gross revenue for the current year should exceed that of 1955-56. This was apparent from rates of dividend already announced or paid since the close of the past financial year by companies from which the Trust's income was largely derived. Although Mr. Beatty found it difficult to forecast how long the present rate of dividend income would continue—as this depended primarily on base metal prices—he believes that over the long term a good return can be expected from the businesses in which the company is interested. So long as good profits were being earned the dividend policy would be continued.

During the past financial year—mainly due to rises in the

price of American Metal Company shares of which the Trust holds about 25 per cent—the market worth of quoted investments moved up sharply to £25,529,438 from £21,559,349 at the end of the previous year. This figure compared with a balance sheet entry of only £3,642,385 (£3,328,112). But this does not represent the full margin over book entries, for unquoted securities, which include a holding of about 14¼ per cent in Tsumeb Corporation standing at £35,639, has been accorded an arbitrary directors' valuation of some £5,000,000. Besides this the liquid position is good and current assets exceeded current liabilities at March 31 by nearly £1,500,000. Thus, even taking into account recent falls in base metal shares, the break-up value of Selection Trust would appear to be at least £1 greater than the present market price of about 81s.

During the past financial year Selection Trust made net profits of £1,433,322 compared with £1,102,086 previously. Dividends of 60 per cent (50 per cent) on the capital as increased by a 5 per cent scrip bonus absorbed £838,183 against £661,031—a further capitalization of 5 per cent is proposed for the current year—and profits carried forward expanded to £595,836 from £453,197.

In common with other shares closely concerned with base metals, Selection Trust ordinary £1 units have fallen considerably from a high point of 95s. reached earlier this year. But at the present price a yield of over 7 per cent may be obtained and this would appear to discount, to some extent anyway, further adverse pressures on metal prices which could arise in the coming months. Meeting, London, June 19.

Another Look at Geoffries and Riebeeck

A good deal has been said and written during the past few days about General Exploration Orange Free State with relation to the impending flotation of Riebeeck Gold Mining Company. Geoffries will be able to take up 3,465,000 shares in this company, 3,207,000 of which are to be offered to stockholders at par in the proportion of 6 Riebeeck for every 10 Geoffries held. As a result of somewhat unenthusiastic assessments as to what price Riebeeck shares might command when introduced to the market later this year, Geoffries have suffered a fall from over 10s. to their present level of 8s. 6d. Whether or not this drop has been justified must, of course, depend on what market conditions prevail at the time of introduction. Meanwhile, it may be useful to point out the favourable position which this mine enjoys with regard to its ultimate capital structure.

Indeed, owing to its arrangement with Loraine Gold Mines whereby twin crosscuts will be driven from that property's No. 2 shaft to Riebeeck's own proposed shaft location, it seems very likely that the company will be able to avoid the enormous expenditure necessary to sink a second shaft. This would save something like £2,000,000.

Should this be the case, the ultimate issued capital envisaged of about £5,500,000 to bring the mine to a crushing rate of 1,000,000 tons p.a. may well prove to be adequate. Various fairly conservative calculations have been made based on a grade of 7 dwt. and costs of 50s. per ton which indicate every likelihood that ultimate dividends could total 2s. per 10s. share. Taking a yield basis of 10 per cent, a price of about 20s. could thus be justified.

On this assumption subscription rights to Geoffries' shareholders would amount to some 6s. a share, leaving only 2s. 6d. at the present price to represent other assets. This is a low valuation seeing that Geoffries will eventually participate in the lower mine of this double-deck proposition if and when it is brought into production at a later date.

Loraine Joins Uranium List

Notification has been received by Loraine Gold Mines that the Atomic Energy Board of S.A. has approved the company's application to become a uranium producer. Loraine will participate in the establishment of a joint uranium production scheme with other O.F.S. gold companies which are either producing uranium or scheduled to do so.

Dominion Reefs' 25 Per Cent Final

A final dividend of 25 per cent has been recommended by Dominion Reefs (Klerksdorp) on its issued ordinary capital of £493,815 in ordinary 5s. shares. Total distribution for the year ended June 30, 1956, has thus reached 50 per cent.

Modder "B" and Rose Deep Repayments

Special resolutions for the return of 6d. per share in Modderfontein "B" Gold Mines and 2s. 6d. per share in Rose Deep have been passed at meetings held in Johannesburg on May 7. Cheques will be posted on or about August 8.

Rose Deep Gives Notice of Closure

Due to the steady decline in ore reserves at Rose Deep and the consequent reduction in stope faces it has been deemed necessary to give the statutory three months' notice of closure to the Government. At present operations are being maintained only with the greatest difficulty. Any additional adverse factor, it is stated, such as a further decrease in tonnage milled, a rise in costs, or a decline in yield, would render production unprofitable. Every effort will, however, be made to continue profitable operations at the mine beyond the period of notice.

Union Minière's Net Earnings Nearly Doubled

Net earnings of Union Minière du Haut Katanga during the past financial year ended December 31, 1955, rose to 6,206,000,000 Belgian francs from 3,362,000,000 previously. Proposed dividends total 2,200,000,000 Belgian francs net against 1,600,000,000 in respect of the preceding year.

Increased Dividend from Société Minière Bécéka

Net profits of the Société Minière du Bécéka for the year to December 31, 1955, after providing for all charges including taxation and depreciation totalled, Fr.347,361,594 compared with Fr.272,561,546 in 1954. The directors are recommending dividend payments equivalent to Fr.2,100 per share compared with Fr.1,600 in respect of the 1954 accounts. This distribution is on the basis of the old share units prior to the 10 for 1 share split which came into force at the beginning of this year. Extracts from the directors' report appear on page 784 of this issue.

Nchanga to Pay Final of 22s. 6d. Net

With the recommendation of a final net dividend (after Rhodesian taxes) of 22s. 6d. on its issued ordinary capital of £7,000,000 in £1 stock units, total distribution of Nchanga Consolidated Copper Mines for the year ended March 31, 1956, has been raised to 30s. net from the previous year's level of 22s. 6d. net.

Profits earned by the company expanded sharply to £25,670,000 from £16,362,000. After taxation of £9,450,000 (£6,180,000) and transfer to sales equalization reserve of £875,000 (Dr. £875,000) net profits came out at £17,095,000 compared with only £9,307,000 in respect of the preceding twelve months. After a sum of £3,000,000 (£1,250,000) had been appropriated for capital expenditure, a total of £3,500,000 was placed to general reserve (nil). Net dividends absorbed £10,500,000 (£7,875,000).

Konongo to Purchase Lyndhurst's Assets

An offer made by Konongo Gold Mines to the liquidators of Lyndhurst Deep-Level (Gold and Silver) to purchase that company's fixed assets for 811,589 Konongo shares of 1s. each plus cash of £10,000 has been accepted. The necessary shares have accordingly been allotted thereby increasing Konongo's issued capital to £350,209 in 7,004,175 shares of 1s. each fully paid.

Reef Values at Ashanti

Although crosscut No. 20 N.E. on level 42 at Ashanti Goldfields Corporation has been driven primarily for the purpose of gaining information regarding ground conditions—no particular gold values being anticipated—it is interesting that the reef which has been cut shows a width of 13 ft. and an assay of 0.4 dwt.

Esperanza in 1956

Estimated trading profits made by The Esperanza Copper and Sulphur Company's subsidiary, Cyprus Sulphur and Copper Company during the year ended March 31, 1956, totalled £158,000. This figure has been based on production costs and estimated proceeds from sales before charging depreciation and development. Ore mined totalled 50,194 tons from Kinousa and 103,636 tons from Limni. Production amounted to 40,111 tons of Kinousa cupreous pyrites and 30,853 tons of Limni

pyrites concentrates. In addition, 430 tons of copper concentrates, containing appreciable gold and silver values, were produced from the Limni mill. Due to weather conditions, no shipments took place during the March quarter of 1956. These were, however, resumed in April.

Indian Copper Earns More and Pays More

A final dividend of 10 per cent plus a bonus of 25 per cent free of Indian income tax has been recommended for the year ended December 31, 1955, by the Indian Copper Corporation on its issued ordinary capital of £914,200. This compares with the preceding year's distribution of 15 per cent and a bonus of 10 per cent. Net profits earned by the Corporation moved up sharply to £416,758 from £263,987 previously. After all appropriations the balance carried forward expanded to £117,083 from £111,715.

The necessary resolutions to effect a capitalization of reserves and bonus issue to members will be considered at the meeting to be held on September 12.

Burma Corporation's Lower Profits

Due mainly to heavy forward sales of pig lead which took place during the final quarter of 1955, which resulted in a consequent reduction in tonnages for sale during the first quarter of the current year, profits earned by Burma Corporation (1951) during three months ended March 31, 1956, declined to £237,450 from £328,653 during the preceding quarter. A further contributory factor to these reduced earnings was a higher level of expenditure.

After taxation and depreciation net profits earned by the Corporation during nine months ended March 31, 1956, amounted to £378,862. This compares with an estimate of £237,960 for the corresponding period of 1954-55. An unabridged version of the company's latest production, estimated revenue, and expenditure figures was given in last week's issue of *The Mining Journal*, page 752.

Kinta Proposes Cash Distribution of 4½d. Per Share

From a sum to be received by way of a further special capital dividend from Tanjong Tin Dredging, Kinta Tin Mines has proposed that an amount of 4½d. per 5s. share should be returned to shareholders by way of a cash distribution. A resolution to authorize this payment will be submitted at the meeting on July 12. If approved, the payment will be included with interim dividends announced on June 14.

Capital Reduction by New Guinea Goldfields

A notice convening an extraordinary general meeting of New Guinea Goldfields for July 9 at which a resolution to reduce the company's nominal share value from 4s. 3d. to 3s. 9d. (Australian) by a return of A.6d. will be considered, has been despatched to shareholders. The amount of £111,808 involved is in excess of immediate requirements and cannot profitably be employed in the business.

Fresnillo Pays More

A common dividend of 60 c. a share, less Mexican dividend tax of 15 per cent leaving 51 c. net, has been declared by The Fresnillo Company. A total of $1.30 will thus have been paid for the year ended June 30, 1956. This compares with only 66 c. for 1954/55.

Amalgamated Metal Earns More and Pays More

A dividend of 10 per cent has been recommended by the Amalgamated Metal Corporation on its issued ordinary capital of £4,435,792 in respect of the year 1955. This represents an increase of 1 per cent over the previous year's distribution. Net profits earned by the group increased sharply to £731,763 from £395,360. Mr. W. Gardner is chairman.

Bid for Stream-Line Filters

A tentative offer of 55s. per share has been received by Stream-Line Filters. The terms of this offer are being studied and a further announcement is expected within three weeks.

Obituary

DR. A. W. GROVES

We deeply regret to record the death of Dr. A. W. Groves, for many years a senior member of the staff of the Mineral Resources Division of the Imperial Institute, of which he had been Principal Scientific Officer since 1950. In 1940 Dr. Groves was seconded to the Home Ore Department of Iron and Steel Control, Ministry of Supply, on which he served till his return to the Mineral Resources Department in 1944. He is the author of numerous publications on geology and mineral resources, among the best known to the mining industry being "Silicate Analysis" and a monograph on manganese.

RECENT INTERIM DIVIDEND ANNOUNCEMENTS

Company	*Year Ending*	*Dividend*	*Date payable*	*This Year to date*	*Total Last Year*
		%		%	%
Amal. Colls. S.A.	.. 31.12.56	7½	Aug. 16	7½	17½
Apex Mines ..	.. 31.12.56	30	Aug. 8	30	55
Apex (Trinidad) *a*	.. 30. 9.56	5	July 25	5	33⅓
Ayer Hitam Tin *b*	.. 30. 6.56	10	July 11	30	100
Barclays D.C.O. *b*	.. 30. 9.56	4	June 15	4	8
Cam & Motor	.. 30. 6.56	20	Aug. 9	40	40
Cons. Diamonds S.W.A.	31.12.55	50	Aug. 16	50	150
Dominion Reefs	.. 30. 6.56	25	—	50	Nil
Globe & Phoenix *c*	.. 31.12.56	30	June 28	60	70
Gopeng Cons. *d*	.. 30. 9.56	10	July 13	20	50
Idris Hydraulic *e*	.. 31.12.56	7½	July 13	7½	27½
Kinta Tin ..	.. 31.12.56	10	July 14	20	75
Malayan Tin *f* ..	.. 30. 6.56	6⅔	July 20	13⅓	40
S. Malayan Tin *g*	.. 30. 6.56	6⅔	July 18	20	46⅔
S. Tronoh Tin ..	.. 31.12.56	7½	July 6	7½	27½
Tanjong Tin *i* ..	.. 31.12.56	40	July 13	70	75
Tronoh Mines *b*	.. 31.12.56	7½	July 6	15	40

a Tax free.
b Latest dividend on increased capital.
c 2nd interim (last year—single interim 60%).
d 2nd interim (1954/55—2 interims 5%; 2 of 10% and 1 of 20%).
e 1955 div. included bonus 7½%.
f Third interim. Of the 1954-55 distribution 20% was paid before 200% scrip issue.
g Third Interim. Of the 1954-55 distribution 20% was paid before 233⅓% scrip issue.
h 1954-55 dividend included 7½% bonus.
i Second interim. Distribution for 1955 made up of 4 interims :—12½%, 12½%, 20% and 30%.

RECENT FINAL DIVIDENDS AND PRELIMINARY FIGURES

Name of Company	*Year Ended*	*Final Dividend*	*Net Profit after Tax This* (£000)	*Last* (£000)	*Total Dividends This*	*Last*
		%			%	%
African Ld. Invest *a*	30. 6.56	21¼	28.7	34.5	21¼	21¼
Ampat Tin ..	31.12.55	37½	—	—	55	42½
Cent. S.A. Lands ..	30. 6.56	10	—	—	17½	17½
Frontino Gold *b* ..	31.12.55	10	112.5	22.7	17½	15
Hendersons ..	31.12.55	15	103.4	78.5	15	15
Indian Copper *c* ..	31.12.55	35	416.7	264.0	45	25
Kaduna Prosp. ..	31.12.55	12½	1.5	2.7	12½	25
Kaduna Synd. ..	31.12.55	25	13.4	27.1	41⅔	66⅔
Kinta Tin ..	31.12.55	20	40.6	36.4	75	42½
Nat. Mining ..	31. 3.56	10	35.6	21.8	10	10
Natal Nav. Colls. *d*	30. 6.56	15	231.0	263.8	25	25
Nchanga Cons. *e* ..	31. 3.56	112½	17,095.6	9,307.0	150	112½
Rawang Tin *f* ..	31. 3.56	15	—	—	27½	25
S.A. Coal Estates *g*	30. 6.56	11¼	385.0	307.6	18¾	17½
Sungei Besi *h* ..	31. 3.56	10	—	—	40	40
Tanjong Tin ..	31.12.55	25	140.3	65.7	100	55
Tweefontein Coll. ..	31. 3.56	17½	10.3	11.1	17½	22½
Waihi Invests. ..	31.12.55	10	—	—	10	10

a Includes 11¼% extra dividend (1954-55 same). Profit figures shown are *before* tax.
b 1955 Dividends tax free (1954—less tax).
c Dividends are free of Indian income tax and include 25% bonus for 1955. (1954—10%). Profits struck after Depreciation £175,000 (£100,000) and General Reserve £200,000 (£150,000).
d 1955-56 dividends include bonus 5% (1954-55 same).
e Net dividends after deduction of Rhodesian taxes.
f Dividends less 30% Malayan Income Tax.
g Profits *before* tax.
h Fourth interim (1954-55 four interims also).

AGENCE MINIÈRE ET MARITIME S A
2, RUE VAN BREE — ANTWERP — BELGIUM
Sworn weighers, samplers of ores, metals and residues.
Agents for shippers at European ports and plants.
Telegrams : Rentiers-Antwerp Telex 3169

SOCIÉTÉ MINIÈRE DU BÉCÉKA

(Incorporated in the Belgian Congo.)

The Thirty-Sixth Annual General Meeting of the Société Minière du Bécéka was held on June 19, 1956. The following are translated extracts from the Directors' Report which has been circulated to shareholders:—

World production of rough diamonds, gem and industrial together has been estimated at 20,506,000 carats for 1954 compared with 20,166,000 carats in 1953.

The Central Selling Organization, which deals with the distribution of rough diamonds, and particularly with the South African output, achieved a new record in 1955, with sales rising to £74,288,695 compared with £62,153,125 in 1954. The figures for the sale of gem diamonds in 1955 as compared with 1954 were respectively £50,253,946 and £45,610,010, and for industrial diamonds were £24,034,749 and £16,543,115.

The total of gemstone sales again exceeded previous estimates, in spite of the reduction in stocks which had been forecast last year. The market in industrial stones continued to benefit from the United States' policy of bartering excess agricultural produce for strategic materials. The demand for boart remained very high. Up to January 1, 1956, prices remained at the same levels as in the preceding year.

As will be seen below, Bécéka's output has increased, but it will be necessary to continue with our development programme, which will entail further substantial capital investment, in order to satisfy demand.

Negotiations for the renewal for a further six years of the contracts which we concluded in 1950 with the Central Selling Organization have reached a satisfactory conclusion, and the contracts were signed last September These will be effective until the end of 1960. Furthermore, as we indicated in our last report, certain modifications have been made to the previous contracts, which will be to the advantage of the Congo producers and of the Belgian diamond cutting industry.

During 1955 there was no change in the number of deposits held under licence by your company. These remained at 55.

DIAMOND PRODUCTION

Lubilash Section. As a result of the firm prices maintained in the diamond market, production increased, reaching a total of 12,413,198 carats, compared with 12,050,758 carats in 1954. Ten mines were in production, of which six worked three pits, one worked two pits and three worked one pit. Thanks to the company's systematic method of working its deposits, the grade of ground being mined compared with the grade of the reserves has differed little over the past few years.

The ever-increasing rate of output since 1946 could not have been effected without a considerable growth in mechanization, which made possible the extraction of 4,100,000 cu. metres of overburden and diamond-bearing gravel treated in 1955, as compared with 1,750,000 cu. metres in 1946. Conversion from manual to mechanical extraction is now practically complete. Mechanical equipment now being employed includes several medium capacity electric shovels, and the necessary diesel haulage equipment has also been provided. In addition, some very large earth moving equipment of a type and capacity which are probably unique in Africa have recently been put into service. Mechanical extraction now represents 92 per cent of total output, compared with 13.97 per cent in 1946.

It has been decided to install a separation, washing and concentration plant, designed principally for the treatment of old tailings accumulated at Bakwanga, but also capable of supplementing, if necessary, existing capacity for treating current ore.

Luebo Section. Three deposits were worked. Production amounted to 46,159 carats, compared with 40,617 carats in 1954.

GOLD PRODUCTION

The output from the Musefu deposit was 17.16 kg. of gold compared with 22.4 kg. in 1954.

PROSPECTING

A survey of the alluvial deposits of the Bushimaie valley was continued according to plan. New reserves were proved in 1955 to an extent sufficient to compensate largely for current depletion. The drilling programme on the Kimberlite formations was completed.

Prospecting for new primary deposits was continued throughout the year, principally by aero-magnetic survey. An examination of the areas of magnetic anomolies have already confirmed the existence of primary deposits at the source of the Katsha River.

ASSOCIATED COMPANIES

Société Bécéka-Manganèse. The erection of industrial plant, including the power station and washery, has been completed. Housing projects for European personnel have been built, and those for Congolese personnel will be finished in 1957. Production of exportable manganese reached 300,714 tonnes in 1955. Shipments have continued satisfactorily. A concentrator has been ordered which will facilitate treatment of low-grade ore which cannot be washed. It is hoped that this plant will be in commission by the end of 1957.

The accounts for the year 1954 closed with a net profit of Frs.C.20,080,322, which, after placing Frs.C.15,000,000 to reserve, allowed of a net dividend payment of Frs.C.175 on the 80,000 shares issued. The statutory royalties payable to the colonial Government amounted to Frs.C.14,457,832. The accounts for 1955 are in course of preparation.

Société Diamant Boart. Sales for the year were 48 per cent above those recorded for the preceding year. This increase was due to the general growth in industrial activity. After allowing Frs.6,208,728 for amortization, and Frs.8,129,290 for insurance and other provisions, the accounts for 1955 resulted in a profit of Frs.16,902,924, to which should be added the sum of Frs.430,386 carried forward from the preceding year. After placing Frs.5,947,342 to reserve, this profit allowed a net dividend distribution of Frs.445 on each of the 15,000 shares,constituting the company's capitalization of Frs.50,000,000. The French subsidiary company is undertaking the complete manufacture of diamond tools in France. To this end it will be considerably augmenting its capital. The Company's fourth financial year closed with a profit which allowed the distribution of a maiden dividend.

Industrial Distributors (1946) Ltd. Dividend distributions in respect of this company's accounts for 1955 show an overall increase of 25 per cent over those for 1954.

Diamond Trading Co. & Diamond Purchasing & Trading Co. Dividend payments on the 1955 accounts for these companies are also being increased.

Société d'Elevage et de Culture au Congo Belge (S.E.C.). The accounts for 1954 closed with a profit of Frs.11,529,207, which allowed a net dividend payment of Frs.100 per share. The accounts for 1955 will permit of a similar distribution.

Union Financiere et Maritime "Ufimar". Profits for the year 1954-55 amounted to Frs.58,001,746, not including the amount of Frs.1,084,309 carried forward from the previous year. A net dividend of Frs.250 was declared, the sum of Frs. 3,822,900 being placed to special reserve.

TRIEFUS & COMPANY

The Ninth Annual General Meeting of Triefus and Company Limited was held on June 15 in London, **Mr. Albert Triefus,** chairman and joint managing director, presiding.

The following are extracts from his circulated statement:—

The profits amounted to £75,692 compared with £46,908 in the previous year. Consolidated profits showed a net profit of £76,363 as against £61,688 for 1954.

Group reserves including undistributed profits now stand at £183,369.

The directors recommend a total dividend on the Preferred Ordinary Shares at the rate of 20 per cent. per annum and a dividend on the Ordinary Shares at the rate of 10 per cent. per annum.

Diamond prices have tended to increase, mainly owing to the demands of the U.S. Government for stockpiling. Important sales were concluded in the U.S.A. and Canada, but our Company continued to concentrate on building up a firm consumer business in diamonds, diamond tools and drill bits by giving actual users the first consideration. As a result, our sales throughout the world show a definite increase and the turnover for the first part of 1956 has again improved.

Although we receive large deliveries from the primary producers, considerable quantities of rough diamonds have to be purchased on the open market at the higher prices prevailing in order to make up deficiencies in supplies.

The supply of diamond Boart by the Producers continues to be insufficient; although deliveries have improved, we still need to buy part of our requirements on the open market at an inflated price which seriously interferes with our powder production.

During the year I visited South Africa, Australia, New Zealand, U.S.A., and Canada, where trade has continued to develop. Mr. Paul Trefusis also made an extensive tour of India and the Far East.

The building of new works at Crawley, Sussex, for Triefus Industries Ltd. was completed early in 1955. Work on tool development and tool applications has now been centralized in a new department.

Our French company has had its first full year's trading and its results show a steady build up.

The report and accounts were adopted.

BRITISH-BORNEO PETROLEUM SYNDICATE

SUCCESSFUL GROWTH OF BUSINESS

The forty-second annual general meeting of the British-Borneo Petroleum Syndicate, Ltd., was held on June 13 in London, **Mr. Malcolm Maclachlan** (Chairman and Managing Director) presiding.

The Chairman in the course of his speech said :—

The revenue for the year, which is derived from our royalty on the production of oil in Brunei, dividends from our investments, and profits on sales of securities, amounted to £355,000. Expenses and directors' emoluments were £13,000, leaving a net profit for the year of £342,000. This profit is added to the £50,000 of unappropriated profits brought forward giving a total to be dealt with of £392,000. Of this amount taxation absorbs £186,000, £25,000 has been transferred to Investment Reserve and £40,000 has been appropriated to General Reserve.

We now recommend the payment in respect of the year to March 31 last of a dividend No. 48 of 1s. 5d. free of income tax per unit of stock. The dividend will be paid on July 5 next.

In addition the directors recommend that £49,998 of the Company's General Reserve be capitalized and applied in full payment of 166,660 units of stock of 6s. each, and that these be distributed to the stockholders in the proportion of one fully paid new unit for each seven units which are now held.

The profit for the year shows an increase of approximately 17% over the previous year and is easily a record in the history of the Company.

We have now recommended increases in the rate of dividend for seven years in succession. Further, during that period the Share Capital will have been raised from £250,000 to £400,000 by the distribution of fully paid shares to our members. I am sure it will be agreed that these are noteworthy indications of the successful growth of our business.

We have achieved these results in the face of the burden of taxation which continues to be onerous. It is particularly disappointing that the present Government should during the past year have seen fit to make increases in the inequitable Profits Tax. Furthermore, no recognition has been given to the recommendation of the Royal Commission on the Taxation of Profits and Income that relief should be given to British Companies operating overseas. This need is particularly urgent in the case of British Companies operating mineral concessions by reason of the substantial reliefs and allowances which are enjoyed by their foreign competitors. Representatives of the Mining and Oil Industries will continue to urge the Government to implement this recommendation.

REVIEW OF INTERESTS

To turn to a review of our interests, it will be recalled that one of the original objects of this Company was the exploration for oil in British Borneo and adjacent territories. After many years' work and very considerable expenditure we made arrangements under which the British Malayan Petroleum Company, a member of the Shell Goup, took over our oil rights in exchange for the right to receive a royalty on all oil production in the State of Brunei and also on any oil production which might be obtained in the Klias Peninsula in British North Borneo. During the year the active production programme of the British Malayan Company in its Seria oilfield in Brunei had been attended with satisfactory results and a record production was obtained. The royalty from that source has made the principal contribution to our revenue for the year.

In addition to our substantial interests in the oil industry we have a number of general investments. The following is an analysis of our investments which have Stock Exchange quotations, based on the Stock Exchange valuation at the date of our balance sheet. Oil stocks 66 per cent, Mining Finance and Mining Companies 20 per cent, Home Industrials 9 per cent and American Securities 5 per cent. The Stock Exchange value of these investments is substantially in excess of the amount at which they are included in the balance sheet.

I now wish to refer to certain changes which we are arranging in the administration of the Company. After serving as Managing Director for 15 years, for over 12 of which I have acted as Chairman, I have told my colleagues that I now desire to retire from these offices. We have therefore arranged that during the course of the current year Mr. Nelson will assume the Chairmanship. My colleagues have asked me to remain on the Board and to serve in an executive capacity together with Mr. Nelson and Mr. Cottell, which I am pleased to do.

Indian Chessman, part of the set once owned by Clive of India

Chequerboard of the East

So many races . . . so many needs . . . so many markets extending over a vast area of the earth's surface. And there The Chartered Bank operates with knowledge and experience sustained by more than a century of close and intimate contact. Branches of The Chartered Bank of India, Australia and China are established in most centres of commercial importance throughout Southern and South-East Asia and the Far East. At all these branches a complete banking service is available and, in particular, facilities are provided for the financing of international trade in co-operation with the Bank's offices in London, Manchester and Liverpool, its agencies in New York and Hamburg and a world-wide range of banking correspondents. In London and Singapore the Bank is prepared to act as executor or trustee.

THE CHARTERED BANK OF INDIA, AUSTRALIA AND CHINA

(Incorporated by Royal Charter, 1853)

HEAD OFFICE: 38 BISHOPSGATE, LONDON, E.C.2

THE CENTRAL MINING—RAND MINES GROUP

DECLARATION OF DIVIDENDS

NOTICE IS HEREBY GIVEN that DIVIDENDS have been declared payable to shareholders registered in the books of the undermentioned Companies at the close of business on 30th June, 1956, and to persons presenting the respective Coupons detached from Share Warrants. Dividends on shares included in Share Warrants will be paid in terms of a notice to be published later by the London Secretaries of the Companies.

The Dividends are declared in South African currency and become due on 2nd July, 1956. Payment from the Office of the London Secretaries will be in British currency at par provided that should there be any difference that may be regarded by the Boards as material between the two currencies on 2nd July, 1956, payment will be made on the basis of the equivalent British currency calculated at the rate of exchange ruling on that date.

Warrants in payment will be posted on or about 8th August, 1956 to shareholders at their registered addresses or in accordance with their written instructions. Warrants will be despatched from the Registered Office, Johannesburg, to addresses in Africa south of the Equator and from the Office of the London Secretaries to addresses elsewhere. Unless instructions, which will necessitate an alteration in the office from which payment is to be made, are accepted by the Companies on or before 30th June, 1956, payment will be made in accordance with existing instructions. Other changes of instructions to apply to these dividends must be received by the Companies not later than 25th July, 1956.

The Transfer Books and Register of Members will be closed in each case from 1st to 7th July, 1956, both days inclusive.

Name of Company (Each incorporated in the Union of South Africa)	Dividend No.	Coupon No.	Dividend Per Share s. d.
Rand Mines, Limited	106	106	2 9
Blyvooruitzicht Gold Mining Company, Limited	21	—	1 0
Consolidated Main Reef Mines and Estate, Limited	93	90	2 0
Crown Mines, Limited	110	110	3 0
Durban Roodepoort Deep, Limited	71	71	1 3
East Rand Proprietary Mines, Limited	73	74	2 0
Modderfontein East, Limited	58	39	1 0
*Transvaal Gold Mining Estates, Limited	91	91	5

*It is estimated that a net loss will be incurred on mining operations during the current half year. Hence the interim dividend of 5d. per share now declared represents the passing on of the payment received earlier this year by way of dividend from S. A. Forest Investments Limited. Consideration is now being given to the desirability of curtailing mining operations still further and initiating action to close down the property and to the distribution to shareholders of the Company's holding of S. A. Forest Investments Limited shares at an early date.

By Order of the Boards,
A. MOIR & CO.
London Secretaries
of the above-named Companies

Office of the London Secretaries :
4, London Wall Buildings, London, E.C.2.

14th June, 1956.

MINING ENGINEER AND GEOLOGIST
B.Sc. Mining. M.Sc. Geology.
20 years' experience Mine Management and Exploration. Base Metals and Industrial Minerals. Seeks Senior position. Write Box No. 579, The Mining Journal Ltd., 15 Wilson Street, Moorgate, London, E.C.2.

SITUATION VACANT: Mine Surveyor, single not over 45 years, for mining company in Tanganyika—excellent opportunities for advancement—applications in writing giving age, experience, education and nationality to Mine's Agents, Leopold Walford Shipping Ltd., Ref. Order Dept., 48-50 St. Mary Axe, London, E.C.3.

SELECTION TRUST LIMITED

Summary of Annual Report for the Year ended 31st March, 1956

CONSOLIDATED RESULTS

	£	(1955) £
Revenue		
Dividends and Interest from Investments	2,920,024	1,978,387
Profit on Realisation of Investments	94,613	176,788
Sundry Revenue	69,314	48,937
	3,083,951	2,204,112
Expenditure	92,944	69,213
	2,991,007	2,134,899
Taxation (after adjustments for previous years)	1,557,685	1,032,813
Net Profit	£1,433,322	£1,102,086
The Net Profit has been utilised as follows :—	£	£
Transfers to Reserves	452,500	402,500
Dividends	838,183	661,031
Added to Unappropriated Profits	142,639	38,555
	£1,433,322	£1,102,086
Exploration Reserve was charged with Exploration Expenditure amounting to	£133,183	£129,002
Dividends per unit of stock (gross)	6s. 0d.	5s. 0d.

It is proposed to issue one fully-paid share for every 20 stock units held.

CONSOLIDATED FINANCIAL POSITION

	£	£
Capital and Reserves		
Issued Capital, 4,709,036 stock units of 10s.	2,354,518	2,242,399
Reserves	3,047,948	2,701,946
Interest of outside Shareholders in Subsidiaries	1,018,729	1,015,000
Debenture Stock outstanding	143,039	148,088
	£6,564,234	£6,107,433
Assets	£	£
Net Current Assets	2,097,132	2,015,419
Quoted Investments at book value	3,642,385	3,328,112
Unquoted Investments at book value	655,284	658,284
Freehold Property and other assets	169,433	105,618
	£6,564,234	£6,107,433

The quoted investments appearing at £3,642,385 had a market value on the basis of Stock Exchange prices at 31st March, 1956, of £25,529,438.

The unquoted investments appearing at £655,284 included the holding in Tsumeb Corporation which stands in the books at £35,639 but which, valued on an arbitrary basis, is worth about £5,000,000.

INVESTMENTS

Selection Trust is principally interested, directly or indirectly, in the following companies :—

African Selection Trust (Proprietary)
American Metal Company
Bikita Minerals (Private)
Chibuluma Mines
Consolidated African Selection Trus
Mufulira Copper Mines
Rhodesian Selection Trust
Roan Antelope Copper Mines
St. Helena Gold Mines
Selco Exploration Company
Selco Holdings
Seltrust Investments
Sierra Leone Selection Trust
Trepca Mines
Tsumeb Corporation
Vaal Reefs Exploration & Mining Company
Western Holdings

Copies of the Annual Report for the year ended 31st March, 1956, may be obtained at the Company's Transfer Office at 26 and 27, WHITE STREET, MOORFIELDS, LONDON, E.C.2.

The Annual General Meeting of Members of Selection Trust Limited will be held on 19th July, 1956, at 12 o'clock noon at the Company's Registered Office at SELECTION TRUST BUILDING, MASON'S AVENUE, LONDON, E.C.2.

For Coal Stockpiling and Reclamation —

the EUCLID S-7 TRACTOR & SCRAPER

★ EUCLIDS will handle all grades of industrial coal and build a stockpile unrestricted by height, width, size or change of location.

★ EUCLIDS will handle loose or compacted coal and spread in uniformly thin layers—compacting to a density that reduces spontaneous combustion hazards.

★ EUCLIDS will handle coal from different types of receiving systems and can change from stockpiling to reclaiming efficiently and quickly—discharging direct into a bunker supply.

★ The entire work of loading, hauling, spreading and compacting is done by one man and one machine.

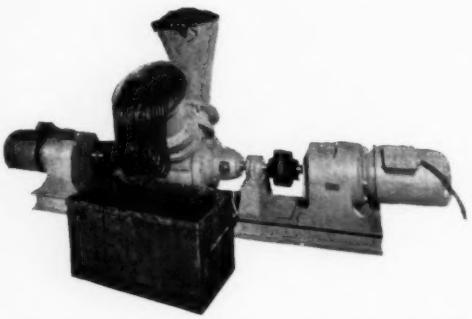
★ For particulars of the EUCLID system of coal stockpiling and reclaiming please communicate with the sole distributors

BLACKWOOD HODGE

Subsidiary Companies Branches Works and Agencies throughout the World

COMET

POWERFUL, POSITIVE-ACTION, SLOW-REVVING PUMPS



A 4" heavy duty pump, driven simultaneously at each end by two 3 h.p. synchronised motors used for such applications as pumping liquorice, tar, soap, etc.

THE COMET PUMP & ENGINEERING COMPANY, LIMITED

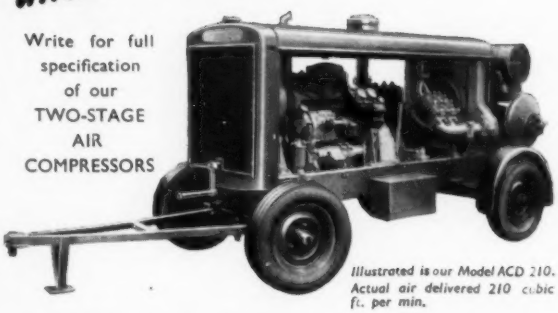
JOHNSON ROAD, WEST CROYDON

Telegrams: **Comet, Croydon.** *Telephone:* **Thornton Heath 3816**

Designed and Built

For HARD WORK under HARD CONDITIONS

Write for full specification of our TWO-STAGE AIR COMPRESSORS



Illustrated is our Model ACD 210. Actual air delivered 210 cubic ft. per min.

PNEUMATIC TOOLS FOR ALL OPERATIONS

THE **LEAD WOOL CO. LTD.**

SNODLAND, KENT

'Phones: Snodland 84216/7.
'Grams: "Strength Phone Snodland"

BY ORDER OF O. G. SUNDERLAND, ESQ., F.C.A., LIQUIDATOR OF DALE MINERALS, LIMITED

FOR SALE AS A GOING CONCERN

FLUORSPAR & LEAD MINE

This very attractive property is offered for sale as a good business investment. It comprises a fluorspar and lead mine together with numerous fluorspar slag heaps. It is situated at Middleton-in-Teasdale, Co. Durham, and is equipped with mill, mechanical handling equipment, power generating plant, power equipment of modern design. All buildings are new and of permanent structure.

Full details available from:

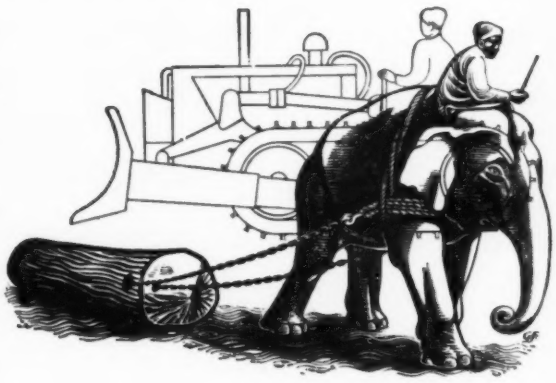
P. W. SILVERSTONE, F.A.L.P.A., F.V.I.,
15 Eastcheap, London, E.C.3
Tel.: MANsion House 0672

WOLVERHAMPTON DIAMOND DIE & TOOL Co. Ltd.

BOARTS and INDUSTRIAL DIAMONDS Exporters

11 HATTON GARDEN, LONDON, E.C.1

Telephone: **HOLborn 3017** *Cables:* **Pardimon, London**



It is impossible to judge from statistics alone how far India's *traditional industries are being reshaped* by Western machines and methods. A first hand experience of Indian life and commerce, like that of the National Bank of India, is needed to put facts into perspective. Enquiries about trade here, or with any other country which is served by the Bank, are welcomed at the Head Office or at any branch.

NATIONAL BANK OF INDIA LTD. *Head Office:* 26, BISHOPSGATE, LONDON, E.C.2

West End (London) Branch: 13, ST. JAMES'S SQUARE, S.W.1

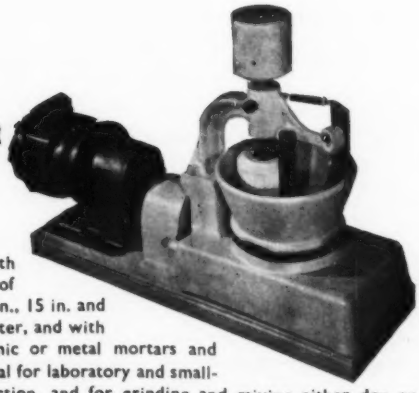
Branches in: INDIA, PAKISTAN, CEYLON, BURMA, KENYA, TANGANYIKA, ZANZIBAR, UGANDA, ADEN AND SOMALILAND PROTECTORATE

Bankers to the Government in: ADEN, KENYA COLONY, UGANDA AND ZANZIBAR

Bankers to the Government in:
ADEN, KENYA COLONY, UGANDA, ZANZIBAR
AND SOMALILAND PROTECTORATE

for laboratory and small scale production . . .

END RUNNER MILLS



Available with three sizes of mortar, 10 in., 15 in. and 20 in. diameter, and with either ceramic or metal mortars and pestles. Ideal for laboratory and small-scale production, and for grinding and mixing either dry or wet material. To facilitate emptying and cleaning, pestles are arranged so that they can be easily removed from mortars.

PASCALL

Write or telephone Crawley 25166-7-8 for List EN 3006

PASCALL ENGINEERING CO., LTD.
GATWICK ROAD, CRAWLEY, SUSSEX

MINING ENGINEER

required to represent the UNITED KINGDOM ATOMIC ENERGY AUTHORITY and the Combined Development Agency in dealing with uranium interests in

AUSTRALIA

for a minimum period of three years. The successful applicant would be based in Sydney but would have to travel extensively. He would be required to devote the major part, but not necessarily the whole, of his time to the post.

Applicants should be QUALIFIED MINING ENGINEERS with at least five years' experience in senior engineering or administrative posts.

The salary for this senior post will be commensurate with its heavy responsibilities and the qualities of the successful candidate.

Write with full particulars, which will be treated as confidential, of age, qualifications, experience and present salary to

Senior Recruitment Officer,
UNITED KINGDOM ATOMIC ENERGY AUTHORITY,
14 ORMOND YARD,
ST. JAMES'S,
LONDON, S.W.1.

Metal and Mineral Trades

A. STRAUSS & CO. LTD.

FOUNDED 1875

PLANTATION HOUSE, MINCING LANE, LONDON, E.C.3

METALS
Telephone: Mincing Lane 5551 (10 lines)
Telegrams: Straussar Phone London

Telex GB LN 8058

RUBBER
Telephone: Mansion House 9082 (3 lines)
Telegrams: Ascorub Phone London

MERCHANTS **EXPORTERS** **IMPORTERS**

Non-Ferrous Metals — Virgin, Alloys, Scrap
RUBBER COPPER REFINERS

Members of the London Metal Exchange
Dealer Members of the Rubber Trade Association
Members of the National Association of Non-Ferrous Scrap Metal Merchants

CONSOLIDATED TIN SMELTERS, LIMITED.

ST. SWITHIN'S HOUSE, 11/12 ST. SWITHIN'S LANE, LONDON, E.C.4

Telephone MANsion House 2164/8 *Telegrams CONSMELTER, PHONE, LONDON*

PROPRIETORS OF THE FOLLOWING BRANDS OF LAMB & FLAG AND STRAITS TIN

ENGLISH INGOTS & BARS — MELLANEAR (99·9% Guaranteed), CORNISH MELLANEAR, PENPOLL (Common and Refined)

STRAITS INGOTS—E. S. Coy., Ltd., Penang BARS—Penang Palm

BUYERS OF ALL CLASSES OF TIN ORES

Sole Selling Agents: VIVIAN, YOUNGER & BOND, LIMITED
PRINCES HOUSE, 95 GRESHAM STREET, LONDON, E.C.2
Telephone: MONARCH 7221/7
Telex: LONDON 8665
Telegrams: BOND, STOCK, LONDON
Cables: BOND, LONDON

Telegrams: "BASSETT, PHONE, LONDON"
Telephone: MANSION HOUSE 4401/3.

BASSETT SMITH & Co. Ltd.

(Incorporating George Smith & Son)

15/18 LIME ST., LONDON, E.C.3

METALS,
ORES (Copper, Zinc, Lead, &c., Complex),
RESIDUES, SKIMMINGS & ASHES
NON-FERROUS SCRAP

ESTABLISHED 1869

BLACKWELL'S METALLURGICAL WORKS LTD.

THERMETAL HOUSE, GARSTON, LIVERPOOL, 19

MAKERS OF
FERRO ALLOYS, NON-FERROUS ALLOYS
RARE METALS

BUYERS AND CONSUMERS OF
COLUMBITE, TANTALITE, TUNGSTEN
MANGANESE and all ORES

Works, Garston. Telegrams: Blackwell, Liverpool

Cable Address: WAHCHANG, NEW YORK

WAH CHANG CORPORATION

(FORMERLY WAH CHANG TRADING CORPORATION)

233 BROADWAY - - NEW YORK 7, NEW YORK

TUNGSTEN TIN

BUYERS
Tungsten Concentrates, Tungsten Tin Concentrates
Mixed Tungsten Ores
Tungsten Tailings, Scrap, Tips, Grindings
Tin Concentrates—Tin Dross, Tin Furnace Bottoms

SELLERS
Tungsten Concentrates to Buyers' Specifications
Tungsten Salts, Tungsten Powder
Tungsten Rods and Wires
Tungsten Ingots, Tin Oxides, Tin Chlorides

PLANT — GLEN COVE, NEW YORK

THE STRAITS TRADING
COMPANY, LIMITED

Head Office :
P.O. Box 700, OCEAN BUILDING, SINGAPORE

Works:
SINGAPORE & PENANG

"The Straits Trading Co. Ltd."
Brand of Straits Tin

THE BRITISH TIN SMELTING
COMPANY LIMITED

Works : LITHERLAND, LIVERPOOL

Smelters of Non-ferrous Residues and Scrap

London Agents :

W. E. MOULSDALE & CO., LTD.
2 Chantrey House, Eccleston Street, London, S.W.1
Cables : Wemoulanco London *Telephone :* SLOane 7288/9

FRANK & SCHULTE
Handelsgesellschaft m.b.H.
(Incorporating Frank & Dieckmann G.m.b.H.)
ALFREDSTRASSE 152 POSTBOX 515
ESSEN, GERMANY
Telegrams: Silizium Teleprinter No. 0857835 Telephone: 75921

ORES MINERALS FERRO-ALLOYS
METAL-ALLOYS METALS
CHEMICALS REFRACTORIES

Established 1922

OFFERS AND AGENCIES SOLICITED

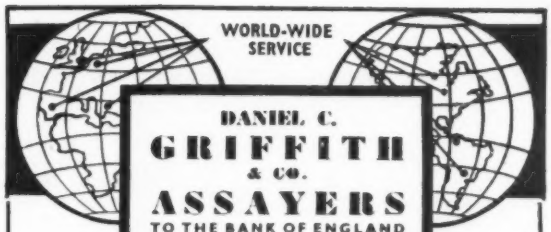
Telephone : AMHERST 2211 (six lines)

E. AUSTIN & SONS
(London) LIMITED

ATLAS WHARF
HackneyWick,London,E.9

Are Buyers of all scrap
NON-FERROUS METALS, GUNMETAL, ALUMINIUM, COPPER, BRASS, LEAD, Etc.

Manufacturers of
INGOT BRASS, GUNMETAL & COPPER ALLOYS, INGOT LEAD, TYPE METAL, ZINC, Etc.



DANIEL C.
GRIFFITH
& CO.
# ASSAYERS
TO THE BANK OF ENGLAND
27/33, PAUL STREET, LONDON, E.C.2.

Branch Office: **LEFKA, Cyprus**

Also at:
BRISTOL
BIRMINGHAM
GLASGOW
HULL
LIVERPOOL
NEWCASTLE
S. WALES

Analytical Chemists, Samplers, Technical representatives in sales of Ores & Metals at all Ports and Works.

Analyses of
PRECIOUS METALS
BASE METALS
ORES & RESIDUES
Etc.

Also in:
BELGIUM
CANADA
FRANCE
GERMANY
HOLLAND
ITALY
PORTUGAL
SPAIN
SWEDEN
SWITZERLAND
U.S.A.

Telephone: **MONARCH 1314 (3 lines)**
Telegraphic Address: **GRYFFYDD, LONDON."**

Telephone: MON. 5941-3 *Cables:* AYRTONMET *Telex:* LONDON 2-2475

AYRTON METALS LIMITED
(Members of the London Metal Exchange)
IMPERIAL HOUSE, DOMINION STREET, LONDON, E.C.2
IMPORTERS AND EXPORTERS OF
NON-FERROUS VIRGIN METALS, SCRAP, ALLOYS, ORES, MINERALS AND BY-PRODUCTS
containing
BASE AND PRECIOUS METALS
DEALERS IN PLATINUM GROUP METALS
ADVANCES MADE AGAINST CONSIGNMENTS
U.S. Agents
The Ayrton Metal & Ore Cpn., 30 Rockefeller Plaza, New York 20, N.Y

Telegrams :	*Cables*	*Telephone:*	*International Telex*
Nonfermet Telex, London	Nonfermet London	Mansion House 4521	London 8547

HENRY GARDNER & CO. LTD.

Non-Ferrous Metals and Semi-Manufactures, Ores, Minerals and Residues, Rubber Iron and Steel and General Merchandise

2 METAL EXCHANGE BUILDINGS, LONDON, E.C.3
and at BIRMINGHAM, MANCHESTER, and GLASGOW

LEAD ZINC

THE ANGLO CHEMICAL & ORE CO. LTD.

(Members of the London Metal Exchange)

PALMERSTON HOUSE, BISHOPSGATE, LONDON, E.C.2.

Cables: "CHEMORE" Telephone: LONDON WALL 7255 (8 lines) Telex: LONDON 8043

COPPER TIN

GEORGE T. HOLLOWAY

& CO LTD.

METALLURGISTS & ASSAYERS,
ORE TESTING, WORKS AND
METALLURGICAL RESEARCH LABORATORIES

Atlas Road, Victoria Road, Acton,
LONDON, N.W.10

Telephone No.: ELGAR 5202 Tels. & Cables: NEOLITHIC LONDON

ROURA & FORGAS, LTD. Telephone No: GERRARD 9641

Sole Sterling Area Suppliers of

ITALIAN QUICKSILVER

PRODUCED BY MONTE AMIATA, S.M.P.A.

COLQUHOUN HOUSE,
27/37 BROADWICK STREET, LONDON, W.1

J. LOWENSTEIN & CO. LTD.

GREENWICH HOUSE,
10/13 NEWGATE STREET, LONDON, E.C.1
Telephone: City 8401 (7 lines)

ORES - METALS - RESIDUES

MINING & CHEMICAL PRODUCTS LIMITED

86 Strand
London WC2
Telephone
Temple Bar
6511/3

Buyers of Ores,
Concentrates
and Residues of

BISMUTH
INDIUM
SELENIUM

EVERITT & Co. LTD. 40 CHAPEL STREET LIVERPOOL

Teleg. Address: Persistent, Liverpool Phone: 2995 Central

SPECIALITY:

MANGANESE PEROXIDE ORES

We are buyers of:

WOLFRAM, SCHEELITE, VANADIUM,
MOLYBDENITE, ILMENITE, RUTILE,
ZIRCONIUM and TANTALITE ORES

Suppliers of:

FERRO-ALLOYS & METALS, NON-FERROUS ALLOYS

RHONDDA METAL CO. LTD.

1 HAY HILL, BERKELEY SQ., LONDON, W.1.

Works PORTH, GLAM.

PHOSPHOR COPPER,
PHOSPHOR BRONZE, LEAD BRONZE,
GUNMETAL, BRASS

Telephone: MAYFAIR 4654 Cables: RONDAMET

BARNET NON-FERROUS METAL CO.

Elektron House, Brookhill Road, New Barnet, Herts.
Phone: Barnet 5187 and 3901

STOCKISTS OF: Aluminium, Brass and Copper
BUYERS OF: all non-ferrous scrap

The RIGHT firm to deal with

P. & W. MACLELLAN LTD.

129 TRONGATE, GLASGOW

NON-FERROUS METALS all classes
INGOT SCRAP MANUFACTURED

Letters: P.O. Box 95 Glasgow
Telegrams: Maclellan, Glasgow Telephone: Bell 3403 (20 lines)

METAL SUPPLIES Ltd

Suppliers of

PHOSPHOR BRONZE CORED and SOLID RODS

72 VICTORIA ST. LONDON S.W.1

Phone: VICTORIA 1735 (3 lines). 'Grams: METASUPS, WESPHONE

WANTED TO BUY

Complex Ores & Concentrates

AND

Mill & Smelter By-Products

CONTAINING

NICKEL	COPPER
COBALT	ZINC
TUNGSTEN	LEAD
MOLYBDENUM	BISMUTH
SELENIUM	OTHER METALS

FLUE DUSTS

Fred H. Lenway & Company, Inc.

112 MARKET STREET - - - SAN FRANCISCO 11, CALIFORNIA

CABLES: LENWAY

ECONOMICS OF SOUTH AFRICAN GOLD MINING

by

R. E. WALLACE and A. S. ROBERTSON

With illustrations by JOHN L. TURNER

THIS book (now available for the first time at a "popular" price) has been specially written for the non-technical mining investor by two Johannesburg accountants in collaboration with a geologist and a mining engineer. It explains how to make full use of the wealth of geological, mining and statistical data, published monthly and quarterly, by the South African groups.

Such information, which is almost invariably reported and commented on in the financial and mining press, often presupposes a degree of knowledge not only of geology and of the techniques of prospecting and mining but also of the limits of economic mining and of the mathematics of share valuation, which many investors do not possess. It is this knowledge which *Economics of South African Gold Mining* supplies.

This book tips no shares, nor does it set out to evaluate the prospects for any particular mine. Its sole purpose is to present the essential background knowledge without which a considered view of this or that South African gold mining share is not possible. It does so in terms which the lay investor can understand, yet in sufficient detail to enable him to put the principles involved to practical use.

PRICE 12s. 6d.

Wanted Regular Shipments

METALLURGICAL LOW GRADE

CHROME ORE

MINIMUM 41% CR203
MINIMUM 2.6 : 1 CR/FE RATIO

ALSO

SCHEELITE TUNGSTEN ORE

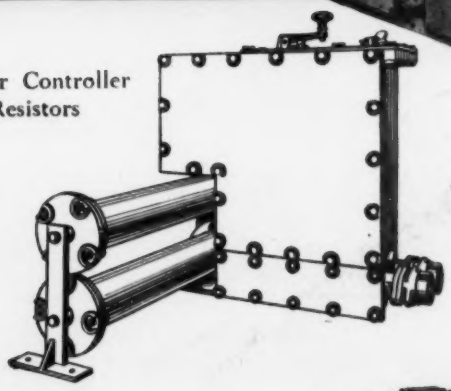
•

COSMO METAL ALLOYS CORPORATION

ESTABLISHED 1895

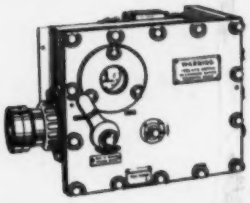
Office: **150 Broadway, New York 38, N.Y.**
Plant: **597-603 Kent Avenue, Brooklyn, 11, N.Y.**
Cable Address: 'EDELORIOUS'

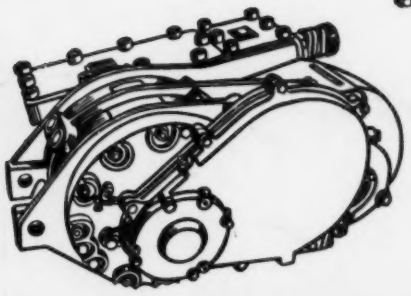
Master Controller and Resistors



FLP

Battery Switch Box





Motor with gears

The British made "ATLAS" 7 ton Battery Mining Locomotive manufactured by Wm. Neill & Son (St. Helens) Ltd. fitted with flame-proof electrical equipment built by

METROPOLITAN-VICKERS
ELECTRICAL CO LTD · TRAFFORD PARK · MANCHESTER, 17

Ka/L301

Member of the A.E.I. group of companies

Published by The Mining Journal Ltd., 15 Wilson Street, Moorgate, London, E.C.2, and printed by Washburn & Sons Ltd. Queens Road, Southend-on-Sea, Essex. Registered as a Newspaper.